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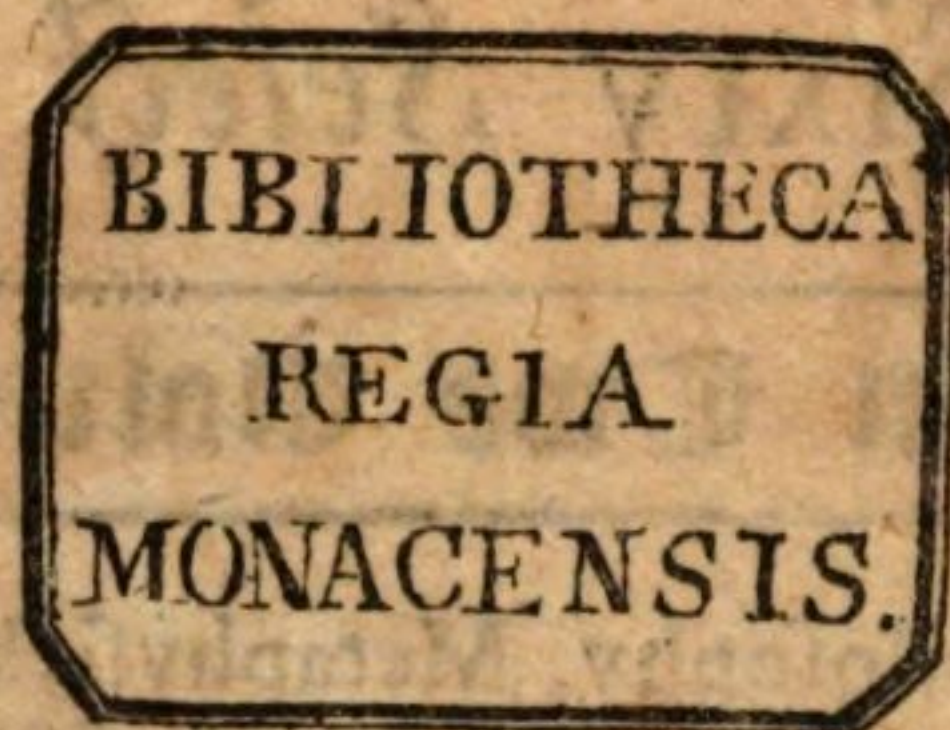
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THE
PREFACE
TO THE
READER.

T*HIS Work comes into the World at a time when nothing but Drollery and Ridicule is thrust upon the Age by Baffling Wits, who can only Canvass a Word, or Clamour at a Phrase in an Author, but never write any thing themselves beyond the Bulk of a Stitch'd Pamphlet; and these Herostratus's, who cannot get a Name by any Eminent Work of their own, seek it in the Destroying that of others. It is easier to be a Critick than an Author. But if he, who would Judge of an Undertaking of this Nature, should first Essay something of the like kind (for Authors should be Tryed by their Peers) we should be rid of these Detracting Enemies.*

In the Treatises of this Volume are many Excellent and Uncommon Collections in Science, which will Discover themselves to the Reader in the Perusal; And they are Embel-

A 2 *lished*

The P R E F A C E, &c.

lished with so many Historical and Diverting Passages, which may be Acceptable and Useful to Ladies as well as Gentlemen, and Introduce them into Universal Knowledge. Youth may be thereby Endued with Learning and Gentleman-like Qualities for their Advancement or Conversation. And thus by mixing Pleasure with Profit, it is hoped that what is principally aimed at by all Judicious Authors, may in some measure be Attained by

H. CURZON.

THE

THE
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OF
LEARNING.

Of ANIMALS.

BRUTE ANIMALS are divided Animals, how divided. into such as Fly in the Air, called Volatiles, or Swim in the Water, called Aquatiles; or go on the Earth, called Terrestrials; or that creep, slide along, as Vipers, Snakes, &c. or are altogether immovable, and are called Reptils.

They are likewise distinguished from the difference of their Generation. Generation, Parts, Actions, &c. Accordingly, some are Viviparous, which are such as bring forth living Creatures; others, Oviparous, which lay Eggs, out of which Animals are afterwards hatched; such are the *Crocodile*, (of which it is wonderful, that from an Egg, no bigger than that of a Goose, it grows to a Creature of Fifteen Cubits length) the *Lizard*, *Frogs*, *Tortoises*, and *Serpents*, who lay their Eggs in Horse-dung, or near Ovens, or the like, because they cannot hatch them themselves. As to Parts. Parts, some have Wings, others Fins; some go on two Feet, others on four, called *Quadrupeds*; and others
B want

Actions.

Places where they
live.Of the Know-
ledge thought to
be in Brutes.Of the Oecono-
my of Bees.Industry of Spi-
ders.
Geese.

want all these. As to Actions, or Manners, some are Wild, others Tame; some Domestick and Sociable, others delighting in Solitude; some Stupid and Dull, others Quick and Cunning. As to the Places where they Live, some are Fiery, as the *Salamander*; others Aquatick, or Watry, and others Terrestrial; some live both on the Earth and Water, which are therefore called Amphibious; such is the *Crocodile*, *Otter*, &c. Some are Subterraneous, and live under Ground. See the *Collection of Rarities in Gresham College*.

So far hath the Opinion concerning the Knowledge of Brute Animals prevailed among Men, and so infix'd hath it been in their Minds, that they who dare think otherwise (saith *Des Cartes*) and refuse to Patronize a Cause which to them appears so clear, can hardly escape the Censure of Folly and Temerity. In this Opinion, almost all Philosophers agree, whether induced by the Industry and Vivacity of Sense, which they observe some Beasts to have, or fancying that they see some Ideas of Reason in them, they make no Scruple to attribute Knowledge and Ratiocination to them, and pronounce them capable of those Perceptions and Apprehensions, which, in reality, distinguish Humane Kind from all other Creatures; not being able to imagine how *Bees*, if void of Knowledge, should build so Geometrically their Sexangular Cells, and fill them so exactly at their certain Times with Honey, chuse Kings and Captains, appoint a Guard, send out Scouts, punish *Drones*, carry out their Dead, &c. Nor how Spiders should be so very Ingenious in their Webs. How the *Geese* of *Cilicia*, conscious of their own Garrulous Nature, when they pass over Mount *Taurus*, carry
little

little Pebbles in their Bills for fear of the *Eagles*, by that means keeping themselves silent and safe. How the Industrious *Ants* build Cities with so much Design and Regularity, making Paths, Streets, Places for Assemblies, Granaries, storing up all the Winter, &c. But it is evident that there are Actions proper to every Species of Beasts, and that they are so determined to certain Operations, that they all design and perform the same thing without any difference. Every *Camel* flies from pure Streams, and hunts after troubled Waters, scraping the Ground with their Feet often to make the Water muddy. All *Conies* dig themselves Burrows to lodge, and cover them with Sand, that they may not lie exposed to the Rapines of the Ferrets. *Harts*, when shot with a Dart, presently seek for the Herb *Dittany*, which eases the Pain, makes the Dart drop out, and Cures the Wound. The *Lyon* will find out the Man that hath shot him with an Arrow, tho' the Man was mix'd among a Crowd. All *Cats* will Lip, Skip, Lick, and are much delighted with the Root of *Valerian*. A *Hen*, at the sight of a *Kite*, makes a Clacking, still advancing her Voice to call her Chickens under her Wing. The Cause of which Actions can be referred to nothing else but Natural Inclination and Instinct, by which Animals are instigated to such and such Motions: So that this or that whole Brutal Species is carried with one Propension, and there is found the same Force and Impulse in all of that Kind. So every *Hare* is alike fearful, and swift in Flight, doubling and turning in their Speed, to escape away; and every *Hound* hath a kind of Craft in following Wild Beasts, and scenting the Way. All *Foxes* are shrewdly cunning

Ants.

Camels.

Conies.

Harts.

Lions.

Cats.

Hen.

Hares.

Hounds.

Foxes.

Apes.

ning in laying Snares for Birds ; of which Creature we read many marvellous Subtleties: And every *Ape* expresse Humane Gestures, receiving what is offered, or comes in their way. Yet it is certain, that nothing of Reason is concerned in their Actions, but that Brutes are impelled to them by a certain Necessity ; and according to that familiar Saying in Schools, they rather Suffer than Act. These and the like Operations are not to be attributed properly to Cognition or Cogitation, but to some other Intelligence, which *Averro's* calls *Non Errant* ; so as that the Corporeal Nature must follow the Conduct of Divine Reason, and its Works be looked upon as Darts that are directed by a skilful Hand to the Mark which the Dart it self has no Apprehension of. The great *Des Cartes* in his Forty Fifth Epistle to a certain Nobleman, said thus, " I am not " Ignorant (*saieth he*) that many Things are " performed by Brutes, far better than by us ; " but this I do not in the least wonder at, " since it helps to prove that they perform " them naturally, and as it were by Springs, " no otherwise than a Clock or Dial, which " declares the Hours far better than we " can find them out by our exactest Judgment. " And doubtless, when *Swallows* approach in " the Spring-time, they act therein in the " manner of Clocks or Dials: And whatsoever " Bees perform, is of the same Nature ; as is " also the Order which *Cranes* observe in Fly- " ing, *Apes* in Fighting; and the Instinct by " which they are carried to bury their Dead, " hath nothing more to be wondred at, than " the Instinct of *Dogs* and *Cats*, who going " about to cover their Excrements, scrape up " the Earth in order thereunto, tho' perhaps " they

Swallows.

Cranes.

“ they never proceed so far as to cover them,
 “ which shews they act unthinking, and only
 “ by Instinct.

Animals observe each of them their certain and determinate Time of bringing forth; *Elephants* go Two Years; *Mares*, Eleven Months; *Camels*, Twelve Months; *Cowes*, Ten Months; *Sheep*, Five Months; *Bitches*, Nine Weeks; and *Birds* lay their Eggs after a set Time.

Animals, how long go with Young.

For Purging the Belly, the *Dog* hath recourse to Grass; the *Hen* to the Wall-flower; the *Swallow* useth Celendine for clearing the Sight; the *Tortoise* useth Origany against all Poisons; the *Hart*, when wounded, useth Dittany; the *Ring-Dove* and *Swallow* make use of Lawrel to Cure any Distemper; and the *Dragon* seeketh for the Blood of the *Elephant* to assuage his Heat.

Animals know how to Cure themselves.

From Beasts, Men have gathered divers excellent Secrets in Physick and Chirurgery; the *Hippotame*, or *Sea-Horse*, hath taught 'em the Use and Necessity of Blood-letting; the *Roe-Buck*, the Healing of the Eyes; the *Black Stork*, called *Ibis*, and the *Herne* Clysters; and our Diets have been taught us by the Lions. See *Pliny* in his *Natural History*, and *Plutarch* in his *Treatise De Industria Animalium*.

Beasts have documented Men.

In the Perfection of the Senses, Man is said to excel in the Touch, tho' some affirm the Spider to have the Prerogative herein. *Apes* enjoy the Sense of Tasting above all other Creatures. *Boars* are the most perfect in Hearing, tho' some attribute it to the Cock. *Vultures* are certainly the most excellent in Smelling, having such Perfection herein, as to smell a dead Carcass some Miles off; tho' Hounds enjoy a great Excellence in this Sense: And

What Beasts enjoy the Senses in greatest Perfection.

Eagles have the most piercing Sight, for tho' they fly so high as to be out of the sight of Man, yet do they see the Fish swim in the Ocean.

Change of Weather
presaged by
Beasts.

Change of Weather is presaged by several Creatures, as the *Heron* flies high against Rain; the *Kite* flies high against fair Weather; *Hedge-Hogs* draw in their Quills against stormy Weather; *Halcyons* betake themselves to their Nests against fair Weather; *Frogs* Croaking, *Swine* routing in Hay, *Cowes* and *Oxen* holding up their Snouts towards the Sky, and snuffing, *Turkey-Cocks* Crying, presage Rain from the Humidity of the Air; also the *Ass*, *Mole*, *Bull*, *Ram*, *Dolphin*, *Duck*, *Cock*, &c. give certain presages of the change of Weather.

What Creatures
most docible.

Horses, *Dogs*, *Baboons*, *Elephants*, &c. upon certain Words or Signs given, obey us, and execute our Commands; of all which, *Elephants* and *Dogs* exceed, the first of which have been taught to Dance, and play upon Cymbals (with their Trunks) tied to their Ears; also we read of an *Elephant* that hath wrote Latin Characters.

Parrots, *Magpies*, *Hyena's*, *Syrens*, &c. counterfeit Humane Speech.

Love between
some Animals.

Delf in the United
Provinces is famous
for the Story of the
Storks, who covering
their young ones in
the Fire-time, all
perished in the
Flames.

The smell of a *Panther* attracts *Apes*, and all other Beasts delight in his Company for the fragrant Smell of his Body. The Scent of the Root *Valerian* pleases *Cats*. The *Cantharus*, a Fish, fights valiantly for his Love, which he ne'er changes during Life. An entire Amity is between the *Pearl-Fish* and the *Prawne*, who together subtilly hunt for Prey, and then divide it. The *Wolf* seeks the *Sheep* out of love to his Flesh; and destroys it, not for any envious Hatred, but to please his hungry Appetite with his loved Food. *Dogs* and *Horses* bear one

Of Animals.

7

one another strong Affection. *Eels* accompany much with *Water-Snakes*, &c.

There is also a great Antipathy between some Animals; almost all sorts of Creatures dread and hate the *Lion*; the *Lion* fears the *Cock*; the *Hen* fears and hates the *Kite*; *Sheep* fear the *Wolf*; *Elephants* can't endure the Grunt of *Swine*, sight of a *Mouse*, or any Red Colour, which much enrages them; a *Horse* is disturbed at the sight of a *Camel*; *Spiders* and *Toads* disaffect one another; *Cats* are envied by *Dogs*; *Mice* abhor the *Cat*; the *Weefel* is at Enmity with the *Toad*; the *Dragon* with the *Elephant*, which have often fought together; the *Pheasant* plagues the *Hart*, when she pitches between his Horns and pecks him; the *Hart*, by Breathing into *Serpents* Dens forces 'em out, and eats them; the *Crocodile* is envied, nay, often killed by the *Ichneumon*, or *Indian-Rat*, a little Creature, that while the *Crocodile* sleeps, steals to his Mouth, and running into his Body, eats and gnaws his Entrails 'till he dies; the *Hawk* is feared by the *Pidgeon*, &c.

Antipathy or Hatred between Animals.

Of the Crocodile see in Africa in our Geography

Antipathy defined.

Strange Animals, &c. See among Rarities in Gresham College, &c.

The reason of which is, That by the sight of such Objects, certain Impressions are transmitted thro' the Fibres of the Nerves into the Brain, which convey the Animal Spirits into the Nerves; which, upon the Blood, being rarify'd after another manner than is usual, sends into the Brain those Spirits which are adapted to the Cherishing and Fomenting of Terror. And whereas, from the Bodies of all Creatures there proceed *Effluvia*'s, or Spirituous Steams, some disagreeing with others, incites Hatred and Anger in each other.

There is also great Antipathies between *Fishes*; the *Myron* and the *Conque*, the *Mullet* and *Sea-Wolf*, gnaw one anothers Tails; the

Of sundry Fishes

Ozona watches opportunity to catch the *Oyster* when he gapes for the Tide; the *Sea-Fox* is cunning like the *Land-Fox*; and some *Fishes* are marvellous, violent, and furious in their Prey, as the *Houperon*, *Maxara*, *Ouldre*, *Maltha*, *Tiburon*, *Vivella*, *Manat*, and *Hoga*, of which none can be Tamed but the *Manat*; the *Torpedo* is a *Fish* that sends a Venom up the Line to the hand of the Angler, which numbs and afflicts him; the *Whale* is a prodigious *Fish*; and *Dolphin*, tho' nothing nigh so large as the *Whale*, deserves more of our Observation; the first yielding Oil and *Whale-bone*, and *Sperma Ceti*; but the latter being a Lover of Man, and greatly delights in Musick, in so much as to have carried Musicians upon their Backs, and brought them safe to Shoar, as Historians affirm. There are infinite sorts of *Fishes*, some having resemblance of Men, Women; nay, even Bishops with Mitres, also Monks; others bearing the resemblance of *Horses*, *Dogs*, and almost every thing that is upon the Land. Of which the *Remora*, or *Sword-Fish* is wonderful, that stops a Ship under sail, as some have affirmed in their Writings.

Of Insects.

The Variety of *Insects* is very great, with respect to their Food, the Quality of their Bodies, and the Place in which they Live; as to the Place, Hairy and Red *Worms* are generated in the Snow; *Fire-Flies*, or *Crickets*, in the Fire; in the Sea, the *Sea-Scolopendra* and *Water-Flea*; in Fresh-water, *Leeches*, *Horse-Leeches*, &c. in the Earth, *Earth-Worms*; between the Barks of Trees, *Wood-Lice*; in Fig-Trees, a *Worm* called *Cerasses*; in the Servise-Tree, Red and Hairy *Worms*; in Vines, the *Worms* called *Butyri*, &c.

The

The Carcass of a *Heifer*, breeds *Bees*; the Skeleton of an *Ass*, Humming *Bees* or *Drones*; the Body of a *Mule*, *Hornets*; the Corps of a *Horse*, *Wasps*; and out of Flesh, breeds *Mag-gots*, *Flies*, &c.

He who is desirous to read Voluminous Ac-counts of all sorts of *Animals*, may have Re-course to these

A U T H O R S,

Pliny's Natural History, Collected out of Two Thousand Authors, *Gesner De Animalibus*, — *History of Birds*, — *De Quadrupedibus*, — *De Piscibus*, *Ælian De Animalibus*, *Plu-tarch De Industria Animalium*, *Aristotle De Na-tura Animalium*, *Seneca's Natural Questions*, *Belon's Singularities*. See also *Solin*, *Gellius*, *Rondoletius*, *Opian*, and others.

Of V E G E T A B L E S and A G R I- C U L T U R E.

IN the Beginning of the Creation, we doubt not but there was a Power communicated to the Earth, of producing great Variety of *Vegetables*, which are still to be found in many Countries: For by an Innate Virtue therein, it still produceth many sorts of *Plants* without the Assistance or Art of the Husband-man. So *Porta* and the Lord *Verulam* assure us, That Earth, dug up from the Foundations of Houses, &c. and put into Pots, after a set Time, or Season, produce several sorts of *Herbs*; and that if Earth be taken up about an Ell deep, 'twill be fruitful the first Year; but

That *Noah* tilled the Earth. See *Gen. 9. 20.*

Purslain, *House-leek*, *Pennyroyal*, &c. sometimes produced without sowing Seeds.

Of Vegetables and Agriculture.

but if taken deeper, not 'till after a Twelve-months Time. Before we proceed to speak of the Propagation of *Plants*, it may not be improper to Define a perfect *Plant*.

A perfect *Plant* may be divided into a Tree, a Shrub, an Under-shrub, and an Herb, and their Parts are either Simple or Compound. The Simple Parts of a *Plant* are the Juice, Nerves, Wind-pipe, and the Flesh. The Compound, the Root, the Stem, the Bark, the Pith, the Branches, Leaves, Flowers, and Fruits. Now to declare these and their proper Functions, know,

The Simple parts
of a Plant.

The Juice is the liquid part of a *Plant*, diffused through the Substance, whereby the *Plant* is nourished.

The Nerves are those Fibres, or Strings, which give Strength to the softer parts of a *Plant*, and by which the Alimentary Juice ascends.

The *Trachea*, or Wind-pipe, is an open Vessel, consisting of little thin Plates, ranged like the Scales of a Fish, or writhen and twisted together.

The Compound
parts of a Plant.

The Flesh of a *Plant* is thick, but somewhat soft, and outwardly covered with the Bark.

The Root is the lowest part, sticking in the Ground, thro' the Passages and Pores whereof the Alimentary Juice being moved by Heat, is driven upwards.

The Stock, Stem, Trunk, or Stalk, riseth up from the Root above the Earth, and transmits the Moisture it receives from it, to the utmost parts of it. In *Herbs*, 'tis called the Stalk, when hollow, the Reed; in *Corn*, the Blade, or Straw; in *Pulse*, the Shaft.

The Bark is the Skin, or Hide, wherewith the *Plant* is cloath'd, or covered, to defend and preserve it. The

The Pith, the Branches, Leaves, &c. are things well known to all, capable of so much Reason, as to judge of what they see.

Plants are to be propagated by Seed, or a Sprig cut or plucked off from the Stock, and set into the Ground, or by Graffing. Of those propagated by Seed, *Note*, before any Seeds are committed to the Earth, the Soil must be duly prepared, either by turning up by the Plough, digging with a Spade, cutting with a Weeding-hook, or breaking up with a Pick-axe; and the Clods are to be broke with a Harrow or Rake. Nature directs us to the most proper Seed-time, *viz.* when the Seeds have attained their full Growth and Maturity, or when by opening their Husks they fall to the Ground. Now for understanding the first Principles of Growth of every *Plant* raised by Seed, *Note*, that the Seeds, being sown in the Earth, after a while meeting with a due Moisture and moderate Heat, begin to swell and distend their Skins, or Husks; and having at last broke them, the same Causes still continuing, afford them new Matter; and the Buds, or first beginning of the *Plants* appear, which by thin Fibres, spreading themselves thro' the Pores of Earth, and the parts of them pressing upon them, must needs make them grow hard, and thus the Roots get them Formation. The Matter thus digested into their Roots, being recruited by new Incomes of Heat, and dilated by the same mounting upwards towards Air, spring up, and grow still higher and higher, 'till they arrive to their Natural Proportion and Product.

The way of Propagating *Plants* by Sprigs or Slips, is to cut a Sprig, or pluck it off, or whilst it yet sticks to its Mother, thrust it into, and cover it with Earth 'till it hath taken Root. These

Plants, how propagated by Seed.

First Principles of Growth.

Propagation by Sprigs.

These Sprigs must be set whilst fresh and green, and may be greater or lesser, according to the Nature of the *Plant*. The more tender any *Plant* is, the later must their Sprigs be set, viz. about the latter end of Spring; and if the Weather be not cold, they must be watered as soon as set; yet if the Sun shine out hot, the new Twigs must be shaded when they are set.

Propagation by
Grafting.

The Art of *Grafting* consists chiefly in that the Application of a *Graff*, or Bud, to its own Stock (or that of another Tree) be set on so, that the inner Bark and Wood of the Stock and *Graff* exactly answer to one another, that the Juice may readily and freely flow from the Stock to the *Graff*, or Bud. There are three chief ways of *Grafting*, 1. Within the inner Bark, when the *Graff* is put in between the Wood and the Bark, and is tied fast with a Thread or small Cord. 2. By means of a Cleft made in the Stock, so as that the Pith of the one may be join'd with the Pith of the other, and then the Slit must be stop'd up with Clay, and bound up with the Bark and Moss. 3. By Inoculation, wherein the Bark is so joined to that of the Stock, (whence the like quantity of the Bark is taken) that the Buds and Eyes of the one may exactly answer to the Buds and Eyes of the other. There are other ways of *Grafting*; as when a Bark and Stock are so closed, that no mark of the Slit remains, and it is afterwards plaistered and bound up; also by Boring, when the *Graff* is put into the Hole that is bored in the Stock; and another is, when many little Sprigs, with their Buds, are grafted into a Perforated Perch. This the *French* call, *En Perch*.

Infoliation.

By Cleft.

Inoculation.

Boring.

En Perch.

Rules to be Ob-
served in Grafting.

In *Grafting* observe, 1. A Scion to be grafted, be not too soft or tender; for then, be-
cause

H

H

H

H

H

H

cause of the tender Texture of its Strings it will not be able to bear the hardness of the Stock into which it is grafted; nor must it be too dry, for then it will not unite. 2. That the Graff be from a fruitful and good Tree, and as near as may be of the same kind. 3. That it be without any delay Grafted, lest Air entring into the Pores, should hinder their growing into one. 4. That the Stock be slit not too deep, which will hinder the closing of it up again. 5. That the Graff be cut so that the Wood may join with the Wood, and the Bark of it with the Bark of the Stock. 6. That the Stock hath stood in the Ground some Months. 7. The top of the Scion is to be cut off, that by beating back the Juice it may swell and grow bigger. 8. That when the Graff is put into the Slit, the place must be pasted about with Wax and Gum, or with Clay and Moss, to keep out all external Moisture. 9. That a fit Season of the Year be observed, that is, after the Winter Solstice, and after the blowing of the Wind from the West, which is, from the Seventh of *February* to the Spring Solstice. 10. That some Trees are altogether unfit for Grafting, as the Oak, Fir-Tree, and other Resiniferous Trees; because the Oak, by reason of its hardness, will not be slit easily, and when slit will not grow together again; and Resiniferous Trees, because of their clammy Liquor, have their Pores so obstructed, that the Juice cannot be readily conveyed to the Graff. 11. That the parts of the Scion may retain the same Situation when grafted on the Stock, as it had before it was cut off, as if it first grew, leaning to the South; in Grafting, it must likewise be turned that way.

Tavernier tells us that in the *Indies*, near *Baroch*, a Mountebank, of a dry Stick, in less than half an Hour, made a Tree of four or five Foot high, which did bear Leaves and Flowers.

Of Vegetables and Agriculture.

Before we speak of what Seeds are proper to be sowed in each Month of the Year, it will be necessary to take Notice, that

Of the Ground.

The *Ground* of Gardens ought to be free from Stones, and well broken, and dunged a Year before it be digged to plant in; and after it hath been digged and dunged, or marl'd again, let it rest, to imbibe it in. A stiff Clay, or Sandy Ground, are neither good; but that is best, which seems fat in handling, and black in Colour, and easily crumbles in the breaking or stirring it with your Fingers. And generally all Grounds that are good for Wheat, are good for Gardens. Stiff Clay and Sandy Places must be amended by Dung and Marl, and should be cast three Foot deep. Marshy, or Watry Ground, should have some Gravelly or Sandy Ground mix'd with it, and Ditches cast round about to drain the Ground. The older the Dung for your Ground is, the better; and the Garden, or Ground, ought to be ordered and dressed each Autumn and Spring; Dig and Manure the Ground in *November*, if you would sow in Spring; and Dig in *May*, such Ground you intend to sow in Autumn.

Time of Sowing.

In sowing, Seeds grow best when they are sown upon moderate warm Days. Cole-worts, Spinage, Succory, Garlick, Leeks, and Onions, sown in Autumn, will live all Winter. Cole-worts, Rocket, Cresses, Coriander, Turnips, Radishes, Parsnips, Carots, Parsley, Fenel, and other Herbs, whose Roots are good in Potage, are sown in Autumn and the Spring; notwithstanding they grow better, being sown in *July*, in hot Countries; and in *August*, in Countries indifferently hot; and in *September*, in cold Countries. Lettice, Sorrel, Purslain, Cucumbers, Gourds, Savoury, Hartshorn, Thrick-

Of Vegetables and Agriculture.

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Thrickmadam, Beets, and other tender Herbs, as also Artichoaks, are sown in the Spring; and for the most part also, those of *March* and *April*, grow more early than those of *February*, according to the diversity of the Time. But for better knowing the proper Business of every Month throughout the Year, we may add these necessary

Directions for the Husbandman.

In **JANUARY**, he may cut down what Wood and Timber he hath, and let it be at the Moon's Decreasing; He may Dung his Fruit-Trees (but take care the Dung touch not the Roots) in fair Weather; He may Cut and Prune his Vines, and cut off superfluous Boughs of Fruit-Trees. In this Month he may sow the Seeds of Asparagus, Cole-worts, Spinage, Lettice, Parsnips, and Radishes.

January.

Directions for the Husbandman.

In **FEBRUARY**, at the New of the Moon, he may transplant Vines of two or three Years old; prepare his Garden-Ground to sow Herbs; give the Earth her second Earing for sowing of Beans, Peas, Barley, Oats, Hemp; at the time of the New Moon, he may sow the Seeds of Thyme, Garlick, Burrage, Bugloss, Marjoram, Purslain, Radish, Rosemary, Sorrel, and Double Marygolds; at the Full of the Moon, he may sow the Seeds of Annis, musked Violets, Blites, Skirworts, White-Succory, Fennel, Parsley; at the Old Moon, Cole-Cabal, White-Cole, Green-Cole, Cucumbers, Hartshorn, Spinage, Cabbage, Lettice, Melons, Onions, Parsnips, Burnets, Leeks.

February.

In **MARCH**, at the beginning, he may sow Line, Woad, Oats, Barley, Peas, Vetches, and such kind of Pulse; also his Nurseries with

March.

Kernels

Kernels of Apples, and may plant such Herbs as are set low and close by the Ground, as Sage, Lavender, Rosemary, Strawberries, Gooseberry-Bushes, Roses, &c. and may sow such Seeds, as in the last Month, besides those of Hyssop, Savory, White-Poppy, Radish, Sorrel.

April.

In APRIL, about St. George's Day, set abroad the Citron, Orange, and Mirtle-Trees, forth of his House, removing the Earth from Foot to Foot, taking away such Roots as shoot forth towards the Surface of that Earth, also superfluous Boughs; He may cut his new Vines, and sow Barley 'till the Eighth or Tenth of May; He may, at the New Moon, sow the Seeds of Marjoram, Thyme, Violets; at Full Moon, Pine Apples; at Old Moon, Artichokes, Cabbage-Cole, Gillyflowers, and Parsnips.

May.

In MAY, he may water the Trees newly planted, weed the Corn, free the Roots of the Vines from the Earth about them, that the Heat may not hurt them, and take away all the tender Branches and green Boughs which bear no Fruit; at the Old Moon he may sow the Seeds of the Blessed Thistle.

June.

In JUNE, clean the Threshing-Floor, cut down the Meadows, Make and Inne the Hay, and crop the Vines; at the New Moon, may sow Gourds and Radishes; at the Old Moon, Cucumbers, Melons, Parsnips.

July.

In JULY, he may cut down the Wheat, Barley, and all other Grain that's Ripe; gather from Apple and Pear-Trees, the faulty Fruit, and such as shall overcharge the Trees; pull the Line and Hemp, and Graff in the Bud; at Full Moon, may sow the Seeds of White-Succory; at Old Moon, Cabbage, Lettice.

In

Of Vegetables and Agriculture.

17

August.

In AUGUST, he may gather those Fruits he would preserve; take away the Leaves from about the Grapes (are backward) that they may receive the Sun's Heat better; at Full Moon, may sow the Seeds of White-Suc-cory.

In SEPTEMBER, may give the Fallows the last Earth; sow the Wheat, Maistlin, Rye, and the like Corn; cut down late Mea-dow Grounds to have the After-Crop, and may gather Stubble for his Fuel all the Year. *September.*

In OCTOBER, he may make his Wines and Cyders, and Vessel them up; may House the Orange, Citron, and Mirtle-Trees, and make what Honey and Wax he hath. *October.*

In NOVEMBER, he may Couch the Wines and Cyders in the Cellar, gather Acorns for the Swine, and such Garden-Fruit as will keep for himself; lay bare the Roots of Artichoaks, and cover them again very well, that Frost may not perish them. *November.*

In DECEMBER, he may drain out what standing Rain-waters there be, and make it run thro' the old Meadows; He may Dung them, if need be, and make Provision of Dung to Manure the Fallows that are broke up and Till'd; He may cover the Roots of Trees and Herbs with Dung, which are intended to be kept until the Spring, and may lop Willows, Poplars, Saplin, and other Trees. *December.*

Note, So soon as the Ground is full of Seeds in all Places, if it be dry, to water it, using therefore good Spring-water that hath stood a little in the Sun, for by Dryness the Seed will be hindred from Sprouting. *General Rules in Sowing and Plant-ing, &c.*

These Seeds following thrive best, being set new, viz. Leeks, Cucumbers, and Onions; C others

others best, being old, as Coriander, Parsley, Savory, Beets, Cresses, Spinage, Poppy.

The Seeds of Lettices, Artichoaks, Cabbage-Cole, Dyers-Grain, Melons, and Cucumbers, must be preserved from Cold.

It is good to plant and gather Graffs in the Last of the Moon, and to graff two days after Change.

Seeds must be gathered in fair Weather, and in the Wain of the Moon; and are best preserved in Bags of Leather, Boxes of Wood, or Vessels of Earth; but Seeds of Onions, Leeks, and Chibols, keep best within their Husks.

Vegetables, with Bubbous Roots, that is, such as consist of Coats, or Coverings above one another, as Onions, Aloes, Herb-Pennyworth, Saffron, Squills, Leeks, &c. do shoot and grow, tho' taken out of the Ground, and hung up (in the Air) within Doors.

What destructive
to Plants.

Plants will grow faster, but die soon, if water'd with hot Water; Oyl, Quicksilver, Cold, or Salt-water, is very destructive to them; and a deep Wound kills any Tree, except the Firr, Pine, and Turpentine, which thrive thereby.

Democritus observed, that streight Trees were shorter Liv'd than crooked ones, which is true; but the Palm, Firr, and Cyprefs, tho' they grow streight, are very lasting.

Those Trees that delight in the warm Sun, are commonly to be set upon a Bank, or against a Wall, facing the South-Sun, the warmth of the Wall will greatly promote the Growth and Fruitfulness.

What good for
Plants.

All Plants will grow much better on even than a hanging Ground; and pressing the Earth round about them, makes the Root grow faster; also South-Winds favour the Growth of
Plants.

Plants. Heat is also necessary to the Nutrition of Plants; and the Lord *Verulam* saith, Kernels, or Seeds laid about the Root of a Plant of the same kind, makes it come earlier and prosper better, because the Kernels draw out of the Earth, Juice fit to Nourish it, and make Trees themselves; which afterwards (ere they can grow up) the Root of the great one, by Strength, draweth away from the Kernels, as great Fish devour the less. He also observes, all Grains and Roots nourish Men more than the Leaves.

Plants degenerate, when Transplanted from a fruitful Place; and again, some Venomous Plants being removed, become wholesome to Eat. So the Peach-Tree, formerly growing in *Persia*, were of a Poysonous Nature, but being Transplanted hither, bear a delicious, and nowise unwholsome Fruit, (unless eaten to Excess.) Sometimes Things degenerate of themselves; thus the Fig-Tree degenerates into the Wild Fig-Tree, Barley into Oats, Wheat into Darnel, sometimes into Spelt, and Spelt into Wheat, Basil into Wild Thyme, Turnips into Rhadish, (as *Sennertus* assures us) Water-mint into Spear-mint, the Black Vine into Briony.

Degeneration of
Plants.

The diversity of Plants is assignable, either to the Soil whence they grow, or to the Pores or Channells thro' which their Alimentary Juice is conveyed, or to their Structure or Figure, or to the Fruits they bear, or to their differing Qualities, or lastly, to the Changes and Alterations to which they are Obnoxious. Some Plants are called *Glandiferous*, or Acorn-bearers, such are the Beech, Oak, Cork, and Chesnut-Tree; some *Coniferous*, from bearing Fruit like a Cone or Pyramid, such are Cædars, Cypress, and the Firr, tho' Firr is reckoned some-

Diversity of
Plants.

Golden Apple,
what.

times among the *Rosiniferous*, or Rosin-yielding-Trees; others are *Pomiferous*, as Apple, Orange, and Lemon-Trees; also Apricock-Trees, whose Fruit the *Greeks* called *Chrysomela*, or Golden Apples; Pomgranat-Trees, so called from the Number of Grains of Seed, and Citron-Trees, which are always Green, of a most fragrant Odour, and the Fruit of a golden Colour. Of Fruit-bearing-Trees, some are *Nuciferous*, or Nut-bearers, as the Nut and Almond-Tree, whose Fruit have hard Shells; others *Bacciferous*, or Berry-bearers, as the Plumb, Olive, Mulberry, and Cherry-Tree; others *Siliquiferous*, or Cod-bearers, as Cassia, Tamarinds, &c. whose Fruit is contained in Cods, or Husks, or a Juicy Shell of a longish Figure.

Warming Vegeta-
bles.

Cooling Vegeta-
bles.

Some Vegetables have a warming Virtue, and a Power to dilate Bodies, as Coleworts, Cabbage, Capers, Cinnamon, Radish, Onions, Rocket, &c. others have a Power of cooling Bodies, as Barley, Cucumbers, Purslain, &c. Vegetables that are Cold in the first Degree, are Roses, Violets, Mallows, Barley, Prunes, &c. in the second, are Sorrel, Lettice, Plantane, Gourds, Oranges, &c. in the third, are Opium, Poppey, Purslain, &c. in the fourth, Meconium, or the Juice of the Heads of Poppy and Hemlock, which latter, by its extream Coldness, stops the Circulation of the Blood, and so extinguisheth Life.

Diuretick Herbs.

Some Herbs provoke Urine, as Saxifrage, Smallage, Juniper-Berries, Nettles, Bitter-Almonds, Roots of Fennel, &c.

Vulnerary Herbs.

Vulnerary Herbs, are Adder's Tongue, Lady's Mantle, &c. whose Leaves conglutinate Wounds, and cure 'em. See Astringent Herbs.

Styptick

Styptick Herbs, or such as assuage Pain, Astringent Herbs. are Marsh-mallows; Wheat, the Root of White-Lilies, St. John's Wort, Mastick, Barley-Flower, and Birthwort, do restore the Flesh in Wounds, as also Plantain and Pomegranate-Shells by their glutinating Virtue. Horse-Tail is a powerful Astringent.

Vomitives, or such as evacuate Humours by Vomitive Plants. the Mouth, are Coloquintida, Broom-Leaves, Nux Vomica, the middle Bark of Walnut-Trees, &c.

Plants that Kill, are some, by reason of their Poysonous Plants. Cold, as Hemlock, which makes Men go mad, or senseless; and Scammony, which draws the Windpipe together, and Choaks 'em; others are Hot, as Napellus, a kind of Wolf's Bane, which burns the Body; Hellebore kills by extream Vomiting; Aconite is a strong Poyson; Crowfoot kills Men with Convulsive Strains, as if they were Laughing.

Alexipharmacal, or Antidotal Herbs, are Antidotal Herbs. such as are good against Poyson, as Purslain cures the Bite of Serpents; Endive, that of Spiders; Wine will resist the poysonous Hemlock; Angelica resists Poyson, as also Mugwort.

For killing Worms, Wormwood, Bitter-Almond, Hartshorn philosophically calcined, &c.

For purging Choller, Rheubarb, Scammony, Medicinal Herbs. Sena, Polypody of the Oak, Dodder or Thyme, Hellebore, &c. Black Choler, or Melancholy, is purged by Carthanius, or Wild Saffron, Agarick, Herb-Mercury, Spurge, &c.

Herbs that encrease Milk, are Fennel, Polymountain, Milkwort, &c.

Beans, Asparagus, the Root Satyrion, Parsnips, Rice, Carrot-Seeds, &c. provoke Lust and encrease Seed, as also Pinenuts.

Of Vegetables and Agriculture.

Poppies, Quinces, the Juice of Pomegranates, &c. stop the Fluxes of Blood, as Saffron, Penny-Ryal, and Sage, move them.

Purslain restores the Teeth when set on Edge by eating sour or harsh Things.

Antipathy in
Plants.

Cause of their
Antipathy.

Marvellous Pro-
perties in Plants.

See *Du Bart.*
Transf. in third
Day of the First
Week.

See Occult Quali-
ties.

The Root of the
Carline Thistle
(which is the
white Chamæleon
of *Dioscorides*)
pluck'd up when
full of Juice and
Vigour, and con-
temperate with
Humane Mum-

my, does, as it were, by an Operative Ferment, exhaust all the Natural Strength and Courage of a Man, on whose Shadow thou treadest, and Infuse it into thee.

The Vine, Cabbage, and Colewort, cannot endure each other; nor the Olive the Oak, no more than the Oak the Nut-Tree. The Olive-Tree, the Colewort, and the Bay-Tree, and the Vine, are at Variance, and hold Antipathy, which is caused by Robbing one another of sufficient Aliment, because nourished by one and the same kind of Juice. Maiden-Hair and Cabbage, abhor Water, Gourds, Oyl.

Willow-wort drives away the Plague, Dittany casts forth Darts, Moon-wort will loose Shackles, Wood-pecker draweth Wedges out of the Holes in Trees, Bettony breaks Friendship, green Saffron bound round the Head relieves Drunkenness; and so great Power is in Herbs, that the *Thessalonian* Sorcerers make use of many to effect their Sorceries. *Lions* touched with the Herb *Adamantis*, forget all their Strength. A Twig of a Wild Fig-Tree tied to the Neck of a Mad Bull, makes him Tame; the like is attributed to the Herb *Ænetheris*. The *Ossifraga* of *Norway* snaps the Bones of Cattle that tread upon it.

Of Herbs may be made the Magical Spit, which roasts Fowls without ever turning.

A piece of Pompion put into a Pot where Flesh is Boyling, makes the same more Tender than ordinary.

A Cup of Ivy filled with Wine, if the same be mingled with Water, the Wine will run out of the Cup.

The

The Live, or Sensible Plant, by some termed Chaste, or Shamefaced, (the *Arabians* and *Persians* call it *Suluc* or *Saluc*) is no sooner touched with the Hand, but it retires back, and starting, contracts it self; for which, Reasons are given by *Blome*, in the Second Part of the History of Nature, Part VII. Chap. V.

The Sensible Plant.

Some Historians tell us of a Tree called *Pudisetana*, which cannot endure the Breath of Man; and of a Tree in *Japan*, that hath Sympathy with Iron; also of Wild Penny-Royal, in *Virginia*, which, if but held half an Hour to the Nostrils of a Rattle-Snake, (the Leaves being bruised) infallibly Kills it.

Another Sensible Plant.

The Kill-Snake.

A Man that hath dip'd his Hand in the Juice of the Root of Water-Mallows, Purslain, and Herb-Mercury, may put it into melted Lead without harm; which proceeds from the Natural Coldness of these Juices, and their clammy Thickness, covering the Hand with a Skin as it were.

The Numb Herbs.

Surius and *Oderic*, in their memorable Matters, in the Year 1504. say, That in the *Caspian* Hills and Isle of *Tartaria*, near *Cazan*, are Plants found resembling new-born Lambs with Flesh, like the Feet and Tail of Crevises; which Plants graze, and droop and die away when Grass faileth.

The Lamb Plant.

Pliny writes of the Sleeping Tree; and some write there are Herbs which resist the Fire; and that Flax made thereof, cometh out of the Fire more white and unconsum'd; which *Tho. Porcachi* saith he saw experienced at *Venice*, Anno 1566.

The Sleeping Tree.

The Salamander Herb.

Heylin in his Description of *Peru*, maketh mention of a Fig-Tree, of which the North Part, which looks towards the Mountains, bringeth forth Fruit in Summer; the South Part,

The ever bearing Tree.

Part, which looketh towards the Sea, is only fruitful in the Winter.

The useful Tree.

Vide in the Remedies and Cures at the end of Physick.

Gomara, in his Third Book of the General History of the *West-Indies*, speaketh of a Fruit Tree, which bears the Fruit called *Cocos*, formed like a Melon, of which the People make Thread, as strong and good as Hemp; the Rind of which burnt is a good Medicine; the inward Nut like Butter, Savory, and Cordial; of which Fruit they also make Chocolate, Sugar, Oil, Wine, and Vinegar.

The loving Tree.
The Palm-Trees that grow in *Japan*, must have no manner of Moisture at the Root, but grow best if set in a hole full of Filings of Iron and dry Sand; and any Branches broke off, if they are Nailed on, will grow as well as Grafted.

Historians write, the Female Palm-Tree always bows, and endeavours to touch the Male; which, if she cannot do, she Pines away and dies.

Read more of this in divers Herbals, published by *Dioscorides*, *Matthiolum*, *Ruellius*, *Fuchsius*, *Pena*, *Dodonæus*, *Dalechamps*, *Char*, *Clusius*, and many others. Only one thing I cannot omit, which is related of a certain Shepherd, who once falling down upon a Sloe-Bush, or Plum-Tree, forgot to pluck out a Thorn of it, which stuck in his Breast, out of which grew afterwards a little Plum-Tree, See *Wanley's Wonders*.

Some Curiosities in Agriculture.

The *Tartars* hate Agriculture, and laugh at Christians for feeding on the Tops of Reeds, for so they call our Corn.

If the Top of a Rose-Tree, presently after its Budding, be cut off, it will Bud and bring forth Roses again about *November* following.

Beans, cut about a Foot from the Ground, just after the first early Crop, will afford a second Crop.

Cucumber-Seeds steeped in Milk ere they be sown, yields a very pleasant Taste in Cucumbers. The like probable in some other Things.

From

From *Agriculture* came the Surnames of the most Noble Families of the *Fabii*, the *Lentuli*, the *Cicero's*, and *Piso's*, who delighted in Fields, and had their Names from the Multitude of that sort of Grain which they did sow.

Let him who desires to read Herbals, peruse these following

A U T H O R S,

Of the Ancients, *Dioscorides*, *Matthiolus*, *Ruellius*, *Rembert*, *Dodonæus*, *Foschius*, *Pliny*, *Pena*, *Dalechamp's* Great Herbal, *Clusius's* Herbals, and History of Simples, *Westmacot's Vegetabilium Sacra*, *Morrison's Plantarum Historia*, *Monardis's* History of Simples, *Langford* of Fruit Trees, *Evelyn* of Salads.

He who would know more of Agriculture, let him read these

A U T H O R S,

Columellas's Agriculture, *Systema Agricultura*, *Quinteney's* Compleat Gardiner, *Platt's* Garden of Eden, *Evelyn's* *Kalendarium Hortense*, *Jardinier Francois qui enseigne a Cultiver les Arbres*, French; *Stobæus's* Discourse of Husbandry, *Epitome of Husbandry*, *Ch. Estienne's* Country House.

Of G E M S.

How generated.

G E M S, or Precious Stones, are Bodies small in Bulk, but of a hard and strong Substance. These are either Transparent, or of a lustrous Colour, and are generated not of a Company of Sands grown together, as the common Stones are, but of a certain fluid Matter, which only constitutes one Grain, provided there be but so much of it as to make some sensible Bulk, and such as is sufficient for a pellucid Body; and if it happen that any metalline Particles be mixed with the Matter, it causeth some Modification of the Light that passeth thro' them; so that it produceth in us the Sense of divers Colours, and instead of a *Diamond* or *Chrystal*, we shall have *Saphires*, *Jaspars*, *Agats*, *Chrysolites*, &c. And therefore Gems or Precious Stones, are divided into Transparent and Coloured. The

Diamond.

Diamond, or *Adamant*, is the most precious and most hard, yet not Proof against a Hammer, or Fire, as has been asserted; nor will it be broke by the Blood of a *Goat*, as others affirm: It differs from the *Chrystal* only in a closer Connexity of Parts. See Dr. *Brown's Enquiry into Vulgar Errors*, where he Treats a great deal about the *Diamond*.

Beryl.

The *Beryl* hath a great resemblance with *Chrystal*.

Carbuncle.

The *Carbuncle* is Red, resembling the flame of Fire.

Chrysolite.

The *Chrysolite* is so named of its Golden Colour. Also,

Hyacinth.

The *Hyacinth* resembles the Lustre of Gold.

Emerauld.

The *Emerauld* is the brittlest Stone, but of a beautiful Green Colour.

The.

The *Topaz* is near the *Hyacinth*, tho' some will have it of a Green Colour.

Topaz.

The *Turcois* is of a Sky Colour mix'd with Green.

Turcois.

The *Amethyst* is soft as *Chrystal*, and is of a Violet Purple Colour.

Amethyst.

The *Morion* is a Gem of a very Black Colour.

Morion.

The *Ruby* takes its Name from its glorious Red Colour.

Ruby.

The *Oynx* is of the Colour of the Nail on a Man's Fingers, thro' which run Veins of the Colour of *Jaspar*.

Oynx.

The *Sapphire*, hardest next the *Diamond*, is of a Sky Colour.

Sapphire.

The *Jaspar* is a Green Stone with mixture of bloody Spots.

Jaspar.

The *Granat* is of a Red Colour mix'd with Yellow.

Granat.

The *Agate* admits of several Colours, as White, Black, and other variated Stroaks in the midst of it. Several come from the *Indies*.

Agate.

The *Opal* is of various Colours.

Opal.

The *Sardonyx* is a Precious Stone.

Sardonyx.

There are other Stones reckoned Precious, as the *Bezoar*, *Pearls*, *Chelidonium*, or the *Swallow-Stone*, &c. the first found in the Stomach of a Beast, called *Pezaine*; the second, in the Shells of *Oysters* and *Muscles*, of a faint light Colour, and without Transparence.

Bezoar.

Pearls.

The clearest and biggest are found at the Isle of *Baharem*. See at the end of Angling.

Coral is of a Mineral Nature, and a kind of Precious Stone.

Coral.

Chrystal is Hexangular, or six corner'd; *Emeraulds* are twelve corner'd, *Diamonds* and *Rubies* eight corner'd, &c.

Mr. *Boyle* maketh mention of a *Turcois* which frequently changed Colour, several Spots

A strange Turcois.

Marvellous Properties in some Stones,

Spots rising in it, which continually shifted their Places. And Historians tell us of a sort of Stones found in *Provence* in *France*, whereof some are Red, others like *Chrystal*, of the Figure of a Lozenge; which being broke or subdivided never so often, fall into Parts of the same Figure. *Mersennus* makes mention of a Stone which cast into fresh Water, lies quiet, but if put into Spirit of Vitriol or Vinegar, is moved. There are Veins of Stone found at *Novigentum*, on the River *Sein*, which imitate the Shape of Plants and Trees; and near *Rome* are Quarries of Stone, the Stones whereof are to be changed into Wood. Mr. *Boyle* hath observed the Vanishing of a Spot in an *Agate*. We read of the Stone *Corcitis*, that being held in the Palm of the Hand, we feel a sort of Pulsation, or beating therein.

The *Diamond* belonging to the Great Duke of *Tuscany*, is Celebrated for the greatest, perhaps in the World, weighing a Hundred Thirty Eight Carats.

See Gems and Stones, mentioned in the Catalogue of Rarities in *Gresham* College.

A Physical Vertue in some Precious Stones,

Very considerable Physical Vertues are attributed to some precious Stones; whereby not only outward Hurts, but many and great inward Diseases are cured. And a Drachm of Powder of *Diamonds* hath been taken without any Prejudice to Health; nay, whole *Diamonds* swallowed (without any harm) and voided again, notwithstanding the false Opinion, that Powder of it taken inwardly procures the Bloody-Flux.

Common Stones, how generated,

Common Stones have their Rise, either from Sand or Clay; and that either from Sand dissolved, or Sand consolidated, that is, when a great Number of the Grains of Sand do grow together,

together, by means of Steams, or Exhalations, filling the Intervals between them and joining them together; such are *Marble, Flints, Touchstone, Whetstone, Pumicestone, Sandstone, Talck, Loadstone, &c.* And also Stones in the Bladder, or Reins of Man. Of all which, I will only speak of that Rarity,

The *Loadstone*, which tho' reckon'd amongst The Loadstone;
Common Stones, yet doth not the Earth produce any Thing more wonderful: It is digged out of the same Mines where the Iron is, and *Gilbertus* saith the best Iron is got out of the *Loadstone*. Its Vertues are, 1. That being in a free Position without any thing to hinder, it directs it self to the Poles of the World. 2. It draws Iron, or another Magnet, to it self, and sometimes also repels the same. 3. By a Touch, it communicates to the Iron, as well the Vertue it hath of Pointing to the Poles of the World, as that whereby it draws Iron. And by its Magnetical Vertue, may Ten or Twelve Needles of Iron, (but Steel is better) or the like Number of Buckles, be made to hang together like a Chain; but those that are lowermost, are weaker in their Attractive Vertue than the other. A *Loadstone* thoroughly heated, loseth its Force to draw Iron. See *Diodorus, Pliny, Mr. Boyle, Des Cartes, &c.* See also hereafter, Iron in the next Treatise of *METALS*.

And here I am unwilling to Omit those rare Stone Monuments, or Wonders, lie disperfed in several Places in *England*. They are Stone-Henge, and other wondrous Stone Rarities in England,
 these, 1. *Stone-Henge* (the *Chorea Gigantum* of the Antients) on *Salisbury Plain* in *Wiltshire*, some of which seem hanging, as if they would fall each Moment, yet cannot be stirred; and carry this marvellous Property (as said) that
 tell

tell them never so often, their Number will never be found to agree. See their Draught in the late Edition of *Camden's Britannia*. 2. The Seventy Seven Stones (commonly call'd *Long Meg* and her Daughters) at *Saleeds* in *Cumberland*. 3. The *Hurlers*, and those at *Biscawwoun* in *Cornwal*. 4. *Rolle-rich* Stones in *Oxfordshire*. 5. The Stones near *Ensham* in *Northumberland*. 6. Those Stones near *Exmoor* in *Devonshire*. 7. Those upon the River *Loder* in *Westmoreland*. 8. Those at *Staton*, or *Stanton-Drew* in *Somersetshire*. 9. Those near *Burrow-Brig* in *Yorkshire*; and also near *Glasfenbury* in *Somersetshire*, are several Ancient Pyramids, mentioned by *William* of *Malmsbury*, with imperfect Inscriptions.

AUTHORS,

Morboldus, or *Marbodeus*, a Writer of Gems and Precious Stones, in Hexameter Verses, flourish'd about *Anno* 1050.

Of METALS.

Metals, what.

How generated.

METALS are Bodies dug out of the Earth, heavy, hard, and fusible by Fire; hid in the inward Part of the Earth, and there generated by the Heat of the Sun, and Subterraneous Fires; such as are *Gold*, *Silver*, *Copper*, *Iron*, *Tin*, and *Lead*. The Particles which Compose these Metals, are Salt, Oil, and Earth, which being mingled together, and meeting in the long and Branch-like Pores of the inward Parts of the Earth, are in the same so straitly linked together, that

that Art has not as yet found any means whereby to separate them. To Metals, some join *Mercury*, or *Quicksilver*, which may be killed by Fasting Spittle, or made solid by being held over the Fumes of Molten *Lead*, &c. *Quicksilver*, unless contained in some Vessel, runs away like Water.

Quicksilver, how
killed.

All Metals, except *Quicksilver*, are Malleable.

Mines of Metals are chiefly found under Mountains, and especially in those Parts that face the East, or South Sun, tho' Metals are sometimes found in Rivers, as *Tagus*, *Ganges*, *Pactolus*, &c. which abound with *Sand-gold* Dust, or Particles of *Gold* or *Silver*, which are gathered and melted into Ingots. Yet Water cannot generate Metals, but only running thro' Grounds which abound with Metallick Veins, carry some Particles along with 'em. See my Lord *Coke's* Opinion hereupon, in our Treatise of ERRORS.

Gold-fanded Ri-
vers.

It is probable that the first finding out of Metals in Mines, was owing to the Conflagration of Woods. So *Aristotle* tells of Shepherds, in *Spain*, who setting a Wood on Fire, found Molten *Silver* run down in the same Place. See in INVENTIONS.

Mines, how pro-
bably first disco-
vered.

The Ground which is Rich in Mines, is generally Barren, affording noxious Steams and Vapours, prejudicial to the Health of the Inhabitants, and the Growth of all Plants. See at the end of *Air* in ELEMENTS, and *Catalepsis* (among the Diseases) in PHYSICK.

The Ground Rich
in Metals, Barren
in Productions.

GOLD is the richest and heaviest Metal, and is Composed of a most Pure and Red subtile Sulphur, and pure *Mercury*, Red, and not Burning, and consists of such thin Particles, and those so firmly woven together, that they cannot

Gold.

Gold boyled in Broth, a vain Practice.

Gold dissolved in *Aqua Regia*, how to be recovered again.

Its vast Extensivity.

Its Properties.

Silver.

Its Properties.

cannot be seperated from one another; by which close Connexion of Parts it will suffer no Dimunition, or Loss by Fire, which makes it appear, that Physicians in vain order *Gold* to be boiled in Broths, to communicate a healing Vertue, since it will not communicate with any Thing. Altho' Chymists can dissolve it in *Aqua Regia*, yet is it not essentially changed; for if to that Solution you put some drops of Oyl of *Tartar*, and common Water, the *Gold* will fall to the bottom, containing the whole Quantity, without the least Dimunition; nor would it lose, if kept many Years in Fire. Neither can any Body be extended or dilated so much as *Gold*; one Ounce whereof, saith *Pliny*, may be beat out into Seven Hundred and Fifty Leaves, each Four Fingers breadth square. Some tell us, One Ounce may be beaten out to cover Ten Acres of Ground; and the Wiredrawers will give it that Extension, that One Ounce will afford a Thread of Two Hundred Thirty Thousand, Four Hundred Foot long. *Gold* is not subject to Rust; and being heated or melted, preserves its Heat longer than any other Metal, and in Weight is Ten times heavier than Earth. *Aurum Fulminans*, see in *CHYMISTRY*.

SILVER is next to *Gold* in goodness, and tho' it doth strangely resist Fire in the melting, yet it is easily extended into Forms under the Hammer, consisting of a plyable Substance, some thinking it imperfect *Gold*, defaulting only in Colour and Substance. It is easily Polished, Clarified, Twisted, and Drawn into Wire, being of a pure *Quicksilver*, and white shining Sulphur. It is found in the Mines in small flat Pieces, intermixed among other Pieces, thereby occasioning the divers Forms

Forms of Fishes, Birds, &c. which by chance Men sometimes find. There are Two sorts of *Silver*, one pure, needing not to be Purified; the other harsh and rude, of the Colour of *Lead*, or Red, Black, or Ashy. *Silver* is a very ductil Metal, a piece of it being covered with Leaves of *Gold*, and then drawn into a Thread never so fine, the *Gold* will be extended with it, there being no part of the *Silver* Thread to be seen which is not gilt. *Silver* Polished, loseth its Natural Whiteness, and becomes Bright and Shining. This Metal is readily dissolved in Spirit of *Nitre*, or *Aqua Fortis*; but not in *Aqua Regalis*, which dissolves *Gold*.

Silver Coins. See
in Coins.

TIN, Chymists look upon as a middle Thing between *Silver* and *Lead*, and call it the Defender of Metals, by reason Vessels Tin'd over, resist the Fire better than others; it is Composed in the Surface thereof of White *Quicksilver*, and inwardly of Red *Quicksilver* and *Sulphur*. *Tin* Calcin'd is more heavy than Uncalcin'd, which is contrary in all other Bodies; and is easily Calcin'd, or turn'd to Powder, if being melted, it be stirred continually, 'till it be grown Cold. The Wound of a Tin-Bullet is more dangerous than that of a Lead-Bullet, by reason the outward Parts of *Tin* are more rough, and abound with sharp Prominences. This is a light Metal, and being touched with a red hot Iron, melts presently.

Tin.

Calcination.

COPPER is one of the hardest Metals, which because of the close Connexion of its Parts, doth long resist the Fire, and is not melted except it be first kindled, and shed so much Light, as that it appears like a bright shining Star in the Furnace; it is engendered

Copper.

of *Quicksilver*, not sufficiently depurated, and of Red *Sulphur*, more Terrestrial. There are Two sorts of *Copper*, to wit, that which is pure, and found in the Mines of *Brass* and *Silver*; the other is Artificial, and boiled out of the *Marchasite*, and other Minerals, and sorts of Stones. *Copper* easily Contracts a blueish Colour'd Rust, called in Latin *Ærugo*. *Copper* and *Tin* being melted together, grow very hard, beyond what each of them are apart. See more in *Iron* below.

Brass.

B R A S S is impure, and of a pale Redness, engendred of *Quicksilver*, less depured, and *Sulphur* Red and Thick; the less impure hath Mines apart; some are found in the Mines of *Silver*. There is a sort of Artificial *Brass*, made of *Marchasite*, and other Stones, and sorts of Earth. From *Brass* groweth *Vitriol* and *Chalcite* of Three sorts, and if Digested or Concocted, *Cadmia*, *Pomphilia*, and *Spodium*.

Iron.

I R O N is the hardest of all other Metals, as being more difficult to melt; and yet it is one of the lightest Metals, and easiest to be destroy'd by Rust, by reason of the Steams which proceed from it; it is engendered of a most impure *Quicksilver*, mixed with a Thick *Sulphur*, Filthy and Burning. The Natural is found in the Mines in Grains and Lumps; that which is melted, is burn'd in Forges, and brought into Forms by main Force of Fire. If a Plate of *Iron* be cast into the Fire, 'till it be red hot, upon taking out, it will be found to be grown longer. *Iron* besmear'd with *Vinegar* and *Al-lom*, becomes like *Copper*; and if *Iron* be cast into *Copperas*, or *Vitriolick* Water, its outside is turned Red; which Red Powder being scraped from it, and melted down, becometh true *Copper*. The same effect *Agricola* mentions by a Well

Transmutation of
Metals.

Well near *Smolnitz* in the Water whereof being disposed into Three Channels, in which pieces of *Iron* being laid, are changed into *Copper*; and *Quicksilver* may be changed into another Metal. *Iron* heated red hot in a Forge, and then put into Water, hardens it; which by often doing, becomes *Steel*, which is more stiff and hard, but yet more Brittle than *Iron*, tho' it hath a greater Force to leap back than any other Metal. *Iron* and *Steel* have abundance of Pores, which are turned, and go winding like Screws, and by means of these it approacheth to the *Loadstone*; and therefore, and because *Loadstones* are dug out of the same Mines, *Iron* is said to be a-kin to the *Loadstone*; and *Iron* cherisheth the Vertue and Life of that Stone. *Iron* that is Rusty, is presently cleansed with Oyl of *Tartar*. Historians tell us of a Pool in *Ireland*, into which a Stake of Wood being thrust, that is covered with Mud, (as saith *Maginus*) changes to *Iron*; that with Water, to Stone. At *Rome*, *Amsterdam*, &c. are seen Bones that have been turned to Stone by Waters. To keep *Iron* from Rusting, besmear it with the Marrow of a Deer, or Oyl. This Metal in its Use, is of most Benefit, and most Prejudice to Man's Life.

Steel, how made.

Iron, how presently cleansed.

See wonderful Fountains in the Treatise of Elements.

To keep Iron from Rust.

LEAD is a blue Metal, partaking a very little whiteness, engendered properly of *Quicksilver* and *Sulphur*, and is easily bent, and as readily melted; it differs only from *Iron* in that the Parts lie more close together, and more smooth, which makes it so pliable and more heavy than *Iron*. *Lead* is useful in Physick and Chyrurgery, being endued with a Cooling Virtue, and mitigates the Præternatural Heat excited in Man's Body, and therefore they use it for the drying and healing of

Lead.

Wounds ; for by its Coldness, it obstructs the Pores of the Body, and stops and hinders the Humour from spreading. *Lead* melted, and stirred with a Stick continually, is Calcined ; *Lead*, tho' it be left never so long in *Aqua Fortis*, will not Dissolve.

Antimony. ANTIMONY is but little different from *Lead*. For the Preparation and marvellous Effects whereof, see *Matthiolus's* Commentary, Chap. LIX.

Quicksilver. QUICKSILVER called by the Chymists, by the Name of *Mercury*, is the heaviest of all Metals, excepting *Gold*, and therefore all other Bodies swim on the top of it without sinking ; and it kills Men chiefly by reason of its Weight. Those who gild Metals, or are employed in Chymical Preparations, commonly hold a Piece of *Gold* in their Mouths to catch the Fumes of *Quicksilver*, which otherwise might prove dangerous to them ; for *Gold* attracts *Quicksilver*. See *Pliny*, Lib. XXXIII. of Natural and Artificial *Mercury*. See also in *Air*, in our Treatise of Elements. And now to denote the most

Famous Mines in the World.

Famous Mines in the World.

Hungary indeed excels most Countries of *Europe* in Mines of *Gold*, *Silver*, *Tin*, *Lead*, and *Copper*; also Baths, and Mineral Waters.

1. A *Gold* Mine in *Cremnitz* in *Hungary*, hath been wrought upon Nine Hundred Sixty Five Years, Ten *English* Miles long, and One Hundred and Seventy Fathom deep.

2. The *Gold* Mines of *America*, where the *Spaniards* found more *Gold* than Earth.

3. A Mine of *Gold* in the Kingdom of *Tipra* in *India*.

4. The Mines of *Potosi*, which have yielded many Millions to the King of *Spain*.

5. The

5. The famous Mine at *Rimili Dominurdz* in *Transilvania*, where are sometimes found large Lumps of Virgin Gold, fit for the Mint without Purifying.

6. The Mine of Gold in the Kingdom of *Assem*, in the *Mogul's* Empire; and many others dispersed about, as that of *Fesse* in *Barbary*; *Fesse* signifying Gold, abundance whereof was found in digging the Foundation. *Castella Aurea*, or the Golden Coast in *Peru*

7. The Silver Mines of *Amberg* in *Germany*, yielding to the Elector Palatine, Sixty Thousand Crowns Yearly.

8. Mines of Silver at *Japan*.

9. Mines of Silver in *Tuscany*.

10. Silver Mines in *Murcia* in *Spain*, where the Romans kept Four Hundred Men at Work.

11. The Mines of Silver in *Assem*, in the *East-Indies*, and others.

12. The Copper Mines at *Sinope* in *Turkey* in *Asia*, and near *Newsol* in *Hungary*, &c.

13. The Iron Mines of *Biscay* in *Spain*, &c.

14. A Vitriol Mine at *Cremnitz* in *Hungary*, Eighty Fathom deep, &c.

15. A Mine of *Lapis Calaminaris* in the Country of *Fuliers*, hath been wrought upon for Three Hundred Years.

16. The Mines of *Sal Gemm*, near *Cracovia*, Two Hundred Fathom deep, and constantly employing above a Thousand Men, yielding a vast Revenue to the King of *Poland*.

17. The Mines of *Tin*, *Lead*, &c. in *Cornwall*, here in *England*, as also in *Wales* some *Lead Mines*, &c. Of Mines in England.

To all which may be added, our Inexhaustible Pits, or Mines of Coals at *Newcastle*, and some in *Shropshire*, &c. Also those vast Pits

near *Feversham* in *Kent*, and *Tilbury* in *Essex*, out of which the Ancient *Britains* dug vast Quantities of *Chalk*. See *Sands*, mentioned in the Catalogue of *Rarities* in *Gresham College*.
RARITIES.

Custom of the
Peak concerning
 Lead Mines.

Where Part of a
 Mine belongs to
 the Discoverer.

Lead Mines, by the Custom of the *Peak* in *Derbyshire*, a particular Part doth belong to any Man that doth first find out the same; and after he hath taken his Possession, which is by driving a cross Stake in the Earth, he having made Election of so much as he may by the Custom, whether the same be a *Meer* of Ground, which is about Twenty Nine Yards, or half a *Meer*, or what he pleases, and may lawfully be demanded by the Custom, they Term him the first Founder; then such others, who will have any Part undisposed (as they may by the Custom demand) they likewise take Possession by a cross Stake. Every Person concerned having taken their respective Possessions, and their respective Shares being known to the Bar-Master, they then proceed to sink their Shafts, and so to get the Ore, which the Bar-Master doth observe that they do equally divide the same, according to their respective Share. The King having every Thirteenth Dish of Ore for his Lot, and the Minister every Twentieth, or thereabouts. There are divers Customs belonging to these Mines, which require Care and Diligence to know, least the Person lose his Share; as if he let the same be unwrought Fourteen Days together, and may well work the same, without the Impediment of Water, (common to *Lead Mines*) he Forfeits the same. There are a Jury of Twelve Men to view the Groves and Mines, to enquire, and observe no Incroachment on one anothers Part, &c.

In

In many Places of *England* and *Wales*, where there are these sorts of Mines, they do not altogether depend upon such Customs, but in many Places they do belong to the Proprietors of the Ground. Lead Mines and Tin Mines in *England*, belong also to the Proprietors of the Ground.

For draining of *Coal* Mines in the North, they mostly use Chain-Pumps, and do force the same either by Horse-Wheels, Tread-Wheels, or Water-Wheels.

For draining of *Lead* and *Tin* Mines, they use such Devices as are used in the *Collieries*; but these Mines lying for the most part in Hills, they drain the Waters out by a Sough.

Royal Mines, are Mines of *Gold* and *Silver*; and if any discovered in *England*, they belong to the Queen, as also Treasure-Trove, &c. for which see the Statutes, and 5 *William & Mary*, Cap. 6. Royal Mines.

AUTHORS,

Erastus *Treatise de Metallis*, *Webster* of Metals, *Agricola de re Metallica*, *Histoire Metallique de la Republique d' Holland*, French. *Pliny*, Lib. XXXIV. *Musæi Metallici*, *Le Grand's Philosophy*, Part II.

Of GRAMMAR and LANGUAGES.

GRAMMAR is the Art of Speaking and Writing a Language correctly; and Languages proceed from Words, Syllables, and Letters.

The first Letters were *Chaldean*, Invented by *Abraham*, as *Pbilo* affirms, and were in use among Of Letters. By whom Invented.

Of Grammar and Languages.

among the *Chaldeans*, *Assyrians*, and *Phœnicians*; tho' others say, that *Radamanth* was the first that framed Letters among the *Assyrians*. After this *Moses* delivered certain Characters to the *Jews*, tho' not the same which are used now; the Author of which, *Ezra* is said to be, and of all the Books of the *Old Testament*. Afterwards one *Linus*, a *Chalcidian*, is said to have brought over Letters out of *Phœnicia* into *Greece*, being the *Phœnician* Characters which were there us'd, 'till *Cadmus*, the Son of *Ægenor*, made, or brought among them other new Letters, to the Number of Sixteen; to which *Palamedes*, in the Time of the *Trojan War*, added Four more; and after him, *Simonides*, the *Militian*, as many more. To the *Egyptians*, one *Memnon* (as said) first taught the use of Writing by the Pourtraictures of Beasts, as is seen in their Obelisks; but for Letters, *Mercury* gave them the first Knowledge thereof. The first that Taught the use of Letters among the *Latins*, was *Nicostrata*, Sirnamed *Carmenta*. Thus we see Seven sorts of Letters most famous in Antiquity. The *Hebrew*, *Greek*, *Latin*, *Syriack*, *Chaldean*, *Egyptian*, and *Getic*. But latter Times have Invented new Letters, which still perished upon introducing others, as those of the *German*, *Spaniards*, &c. were by the *Roman* Character; and the *Roman* Letters again corrupted by the *Goths*, *Lombards*, *Franks*, &c. Nor is the *Hebrew* less different from what it was, there being great Dissention among the *Talmudists*, some affirming *Adam* spake the *Aramæan* Language; others, that the Law was delivered by *Moses* in the *Hebrew* Character, which was afterwards changed into the *Aramæan* Idiom, and written in the *Assyrian* Character by *Esdra*s;

Seven sorts most famous in Antiquity.

Letters changed.

Language of *Adam*.

dras; others differing from these, believe the Law was written in the same Character now us'd.

The *Egyptians* gloried themselves in Times past to be the most Ancient People in the World; and one of their Kings, named *Psammeticus*, assaying to find out the Truth, and imagining Children would, by Nature, speak the Original Language, caused Two new-born Infants to be brought up in a certain Place, and no Man to pronounce one Word before them. After Two Years Time their Lodging was opened, and the Children pronounced no other Sound or Thing but *Bec, Bec*, (which Sound they learn'd probably of the *Goats* that were shut in with them to Suckle 'em, during the Time of their Confinement.) This Word being examined, was found to signify Bread, in the *Phrygian* Language, therefore were the *Phrygians* accounted more Ancient than the *Egyptians*. But *Goropius*, a Physician of *Brabant*, in his Book, Entitled, *Origines Antuerpianæ*, aims all he can possibly to prove the *Cimbrique* Tongue (which is in his Opinion the *Lower Almaine*) to be the first Language of the World; while (as is said before) others affirm the *Aramean* to be the first Language in the World. But with much more Reason and Certainty is the *Hebrew* maintained to be the Original Language of the World; nor is there any Nation under Heaven (saith the Summary on *Sylvester's Du Bartas*) that retaineth not some *Hebrew* Words, as the *Chaldean*, *Syriack*, *Arabick*, *Egyptian*, *Persian*, *Ethiopian*, *Gothick*, *Trogloditicque*, *Punick*, &c. which are in such sort derived, that they approach the same as the *Romans* do the *Latin*, the one more, the other less.

Psammeticus's Invention to find the first Language of the World.

The

Of Grammar in
general.

The first Inven-
ter of this Art
among the Gre-
cians, is said to
be *Prometheus*;
Cretes Mallotes was
the first brought
Grammar into
Rome, being sent
by *Attalus*, be-
tween the Second
and Third *Punick*
War, which af-
terwards *Palamo*
professed with
great Ostentation,
calling it the *Pa-
lamonian* Art.
Didymus is said
to have had Four,
some say Six
Thousand Books
upon the Subject
of Grammar.

The Art of Grammar considereth Two Things in Words, the Letters and the Syllables, as likewise Two sorts of Letters; for some Sound alone, and are called Vowels, as, *a, e, i, o, u*; others Sound not alone, but together, with some other Letter, and they are called upon this account, Consonants, as these following, *b, c, d, g, k, p, q, t*, (which Letters are called Mutes) as, *f, l, m, n, r, s, x, z*, are called half Vowels.

A Syllable that has a full Sound, is made up either of a Vowel and a Consonant, or of Vowels and Consonants.

In Words, Grammar considereth their Accents, or Tone, whether *Acute*, or *Grave*, or *Mean*; their *Derivation* and *Etymology*, their *Composition* and *Simplicity*; their *Numbers*, if the Word be a *Noun*, *Plural*, *Singular*; their *Cases*, *Nominative*, *Genitive*, *Dative*, *Accusative*, *Vocative*, *Ablative*; if the Word be a *Verb*, it considereth the *Tenses*, as, *Present*, *Imperfect*, *Perfect*, *Future*, or to come.

It Teacheth the Art of Construing Words one with another, as the *Adjective* with the *Substantive*, in order to make a congruous Speech, either continued or interrupted: It distinguisheth the Sentences by Three Notes, which we commonly call *Comma*, *Semicolon*, *Colon*; or, as the *Latins* speak, *Punctum*. See the Points for true *Orthography* at the end of this particular Treatise.

And now I will proceed to speak somewhat briefly of the *Hebrew* Language, and Letters; also the *Greek*, *Latin*, *French*, *Spanish*, *German*, *Turkish*, and many others, and conclude with the *Saxon* and *English*; of which last I intend to speak more largely, and therefore place it last, as well as for that it contains the
Excellence

Excellence of many of the foregoing Languages.

Literarum Hebraicarum.

Nomina.	Figuræ.	Similitudo.	Potestas.	
Aleph	א	א	Spiritus lenis	1
Bheth	ב	ב	bh	2
Ghimel	ג	ג	gh	3
Dhaleth	ד	ד	dh	4
He	ה	ה	h	5
Vau	ו	ו	v conf.	6
Zajin	ז	ז	z	7
Hheth	ח	ח	hh	8
Teth	ט	ט	t	9
Jodh	י	י	j conf.	10
Chaph	כ	כ	ch x	20
Lamedth	ל	ל	l	30
Mem	מ	מ	m	40
Nun	נ	נ	n	50
Samech	ס	ס	s acutum	60
Ghnajin	ע	ע	ghn ngh	70
Phe	פ	פ	ph	80
Tzade	צ	צ	ts	90
Koph	ק	ק	k	100
Resch	ר	ר	r	200
Schin	ש	ש	fch fh	300
Sin	ס	ס	s	
Thau	ת	ת	th	400

The *Hebrew* Tongue comprehendeth many of the *Hebrew* Things in a few Words, and is wondrous Significant; so that the *Rabbins*, or *Hebrew* Doctors have observed in the Twenty Two Letters of the *Hebrew* Alphabet (either considered distinctly, or united the one with the other) all the

the Secrets of Divinity and Philosophy, both Natural and Moral, and all the Letters have their proper Signification; nay, one Name, Word, or Letter, will make a Man understand a whole Sentence; in Imitation of which the *Egyptians* had their *Hieroglyphicks*. And there is scarcely one Word in the *Hebrew* Tongue, which being transferred (as it may easily be) sometimes in Two, Three, or Four sorts, according to the Number of Letters, which presenteth not another Word, or Concordant Relative, or contrary Sense. This Tongue is called the *Holy Language*, and is to be read backward, *i. e.* from the Right Hand to the Left. As touching the Mysteries of the *Hebrew* Alphabet, *Eusebius*, and *St. Jerome* in his Epistle *ad Paulam Urbicam*, which is the Hundred Fifty Fifth, expound them to this Sense. The first Letter, *Aleph*, signifieth Doctrine; *Beth*, a House; *Ghimel*, Plenitude; *Daleth*, Tables; *He*, This; *Vau* and *Zain*, That; *Cheth*, Life; *Theth*, Good; *Joth*, Beginning; *Chaph*, Hand; *Lamed*, Discipline, or Heart; *Mem*, Of them; *Nun*, Perpetual; *Samech*, Aid, or Succour; *Ain*, Fountain, or Eye; *Phe*, Mouth; *Sade*, Justice; *Coph*, Vocation; *Resch*, a Head; *Schin*, Teeth; *Tau*, Signs; which may be expounded thus,—The Doctrine of the Church, which is the House of God, is found in the fulness of the Tables, that is, of the Divine Books. See more of this in the Summary upon *Du Bartas*. Babylon.

Of the Greek.

The *Greek* Tongue hath in some sort seconded the *Hebrew* in the Signification of Proper Names, but not with such Grace and Majesty; and of this Language were Five Dialects, *viz.* 1. *Attick*; 2. *Dorick*; 3. *Æolick*; 4. *Ionick*; 5. The Common Dialect, or Phrase of

of Speech. This Language is excellent for Philosophy and the Liberal Arts, but more excellent for so great a part of the means of our Salvation delivered therein, also for its lofty

Græcorum Literæ.

Figura.		Nomen.	Potestas.
A α	ἄλφα	Alpha	a
B β β	βῆτα	Beta	v
Γ γ γ	γάμμα	Gamma	g
Δ δ δ	δέλτα	Delta	d
E ε	ἑψιλόν	Epfilon	e breve
Z ζ ζ	ζῆτα	Zeta	z
H η	ητα	Eta	e longum
Θ θ θ	θῆτα	Theta	th
I ι	ιώτα	Iota	i
K κ	κάππα	Cappa	k c
Λ λ	λάμβδα	Lambda	l
M μ	μῦ	Mu	m
N ν	νῦ	Nu	n
Ξ ξ	ξῖ	Xi	x
O ο	ὀ μικρόν	o micron	o parvum
Π π π	πί	Pi	p
P ρ	ῥῶ	Rho	r
Σ ς σ s	σίγμα	Zigma	s
T τ τ	ταῦ	Tau	t
Υ υ	υ ψιλόν	Y pfilon	u
Φ φ	φῖ	Phi	ph
X χ	χῖ	Chi	ch
Ψ ψ	ψῖ	Pfi	ps
Ω ω	ὦ μέγα	O mega	o magnum

Sound and significant Expressions of the Mind; so that in the flourishing of the Commonwealth it over-topped the *Latin*, in so much that the Histories of *Rome* were writ in this Tongue,

Tongue, as *Polybius*, *Dion Cassius*, *Appian*, &c. The *Grecians* having Transcribed Ancient Authors into their own Tongue, caused their Books to be burned, whereby it should appear to After-ages, no Art or Science remained but what was derived from them; by which Policy, or rather Plagiary, *Greece* got the Name of being the Mother of Arts and Sciences. The *Greek* Tongue, as well as the *Latin*, hath changed Five or Six times, and is much fal'n from its Elegancy, great Disputes arising, touching the Writing and Pronunciation, as well as Disposition of the Terms thereof; some of which may be seen in *Agrippa's Vanity of Arts*.

Five Greek Letters mystical, misteriously considered.

Υ Ψ

⊙

1. Υ *Ypsilon* betokeneth Man's Life, and is called by *Pythagoras*, *Samius's* Letter, for he first formed the same, *ad exemplum Vitæ humanæ*. This Letter hath Three Points, Two above and One beneath, signifying sundry Ages; that underneath sheweth the first Age, which is uncertain, whether it will apply to Vertue or Vice; and the Two above begin from the Youth, the Right Part whereof is hard, but tends to a Blessed Life; the Left more easy, but leading to Destruction. 2. *Theta*, which signifieth Death; for Judges set the same Letter on their Names, or Heads, who were Condemned to Die; as likewise did Captains in their Briefs, wherein were contained the Names of their Soldiers, by which, certain Account could be given to their Sovereign how many were slain, and therefore it is called *Theta à Morte*, that is to say, Death, for it hath in the midst

midst thereof a Dart in Token of Death.

3. *Tau*, a Figure of the Cross of Christ; and in *Hebrew*, is interpreted a Sign or Mark, of which it was spoken to the Angel, which *Ezekiel* saw in Spirit, "Go thy way through the
" City of *Jerusalem*, and set a Mark upon the
" Foreheads of them that Mourn, and are sorry
" for all the Abominations that be done therein.

By which Mark they were preserved in the midst of them that were slain and destroyed for their Idolatry, in the Wrathful Displeasure of the Lord. And this Letter also, *apud veteres*, was used of Captains and Heralds, and signed on their Names who remained alive after the Battle. So that the Letter *Theta* was used as the Mark of Death, and *Tau* of Life, or of them that were by the Judges quit from Death.

This Letter T, as well the *Greeks* as the *Latins*, have pictured and set forth as the true Mark or Sign of the Cross of Christ. 4. and 5. The first and last Letter of the *Greek* Alphabet, Christ only doth challenge to himself, for he is the Beginning and Ending; as where he saith, *I am Alpha and Omega, the Beginning and End, &c. Apoc. Chap. I.*

The *Latin* Tongue is more Nervous and Grave than the *Greek*, and hath been advanced by the *Roman* Arms, whose Conquests spread it over all Nations. This Language hath recovered much of its Lustre, by divers Great and Learned Men sprung up in *Europe*, tho' it hath scarce yet attained to the Vigour and Grace of the Ancients, such as *Cicero*, *Cæsar*, *Titus Livius*, *Horace*, and others. We read, the Language of *Italy* was divers; In *Apulia* they used the *Mesapian* Tongue; In *Calabria* the *Greek*; In *Etruria* the *Tuscan*; but in *Latium* the *Latin*, which last so altered in

T

A & Ω

Of the *Latin*.

in a little Time, that *Polybius* saith that the Articles of Peace made between the *Romans* and *Carthaginians*, could not be understood by the best Antiquaries of his Time. As to the *Latin* Letters, great Disputes have been whether *H* be a Letter or not. The *Roman* Character is well known, and therefore we need not insert the Letters, but will only Note, That in Pronunciation of Words, the *English* love to Accent the first Syllable, the *French* the last, but the *Latins* the Penult or Antepenult.

Of the *French*.

The *French* Tongue is a smooth and courtly Language, but is something difficult to learn, the People leaving out in their Pronunciation many of their Consonants; and instead of pronouncing their Alphabetical Letters as we do, pronounce them thus, *Aw*, *Bé*, *Cé*, *Dé*, *Eé*, *Ef*, *Gé*, *Ashe*, *Ee*, *Ell*, *Eam*, *Ean*, *O*, *Pé*, *Kûu*, *Err*, *Efs*, *Te*, *V*, *Ixe*, *Ze* Greek *Zede*.

Oüy is pronounced *Wee*, *Au* like *O*, *Mot* like *Mo*, *Ment* like *Mong*.

Hieroglyphicks.

The *Egyptians* used certain Pourtraictures of several sorts of Creatures (called *Hieroglyphicks*) instead of Letters or Characters. For which see our Treatise particular of *HIEROGLYPHICKS*.

Of the *Spanish*.

The *Spanish* Tongue hath so much Affinity with the *Latin*, that Mr. *Brerewood* in his Enquiries, saith he hath seen a Letter, every Word whereof was both good *Latin* and good *Spanish*. *Merula* shews a Copy of the like, Page Three Hundred, and by reason of Consonancy with the *Latin*, the *Spaniards* call their Language Romance. However, there is a sensible Difference to be found, as in the *Pater-Noster* may appear, which runs thus, *Padre nuestro, que estas en los Cielos, Sanctificado sea*

tu Nombre; Venga a nos tu Regno; bagase tu Voluntad, assi en la tierra como en el Cielo. El pan nuestro de cadadia, &c. The other Ingredients of this Tongue are generally the *Gothick*, *Arabick*, and *Old Spanish*, and in some Places the *French* also.

The *German*, or *Dutch* Language, hath less commixture with the *Latin* than any which is used in the Western Parts; it is very harsh, by reason of its so many Consonants, having several corrupted *French* and *Latin* Words also intermix'd therewith. This Language, with a small difference, is spoke in *Swedeland*; (the Persons of Quality speak the pure *German*) and the Language of *Denmark* is originally from the *Teutonick*, for the Better sort of People use the High *German* in Discourse, but if they Talk with Strangers they use the *French*.

Of the *German*.

Swedish.

Danish.

The *Turks*, for the most part, use the *Arabick* Letters, which are of a very strange Form, especially that which they call their Running Letter, in Comparison of the *Greek*, *Latin*, and *French* Writing. The *Turkish* Language being originally the *Tartarian*, borrowed from the *Arabick*, their Words of Religion; from the *Persian*, their Words of State; from the *Grecians*, their Words and Terms of War; and from the *Italians*, their Terms of Navigation. This is called the *Sclavonian*.

Of the *Turkish*.

The *Polanders* speak a Dialect of the *Turkish* or *Sclavonian*.

Of the *Polish* Language.

The *Hungarians* have a peculiar Language of their own, like the *Transilvanian*. Vide p. 53.

Hungarian.

The *Portugals* speak a Language compounded of *French* and *Spanish*.

Portuguese.

The *Tartars* (Anciently called *Scythians*) have a Language resembling the *Turkish*, as the *Spanish* doth the *Italian*; for as *Italians* and

Tartaresque.

Spaniards can understand one another, so can the *Turks* and *Tartars*.

Scotch.

The *Scotch* is a Corrupt *English*, mix'd with *German*, *Low Dutch*, and *French*.

Irish.

The *Irish* is thought to be of *British* Extraction, but is of great Antiquity, and the Letters have some resemblance of *Hebrew*, *Saxon*, and other Characters; and the old *Irish* is now become almost unintelligible, very few Persons being either able to read or understand it. See p. 54.

Welsh.

The *Welsh*, or *British*, is thought more pure to its Primitive Language, which the Ancient *Britains* did use, than any Modern Tongue in *Europe*, yet is unpleasant to the Ear, by reason of its many Consonants.

Arabick.

The *Arabick* is a Language so Enchanting, that 'tis a common Hyperbole, That the Saints in Heaven, and those in Paradise, speak it. The Holy *Decalogue* and the Delusive *Alchoran* were both given in the *Arabesque* Tongue.

Of the *Persian*
Tongue.

The *Persian* Tongue is esteemed the Modish Language of *Asia*, and hath a great Tincture of the *Arabick*, by which the *Persian* Language is so sweet, that it is only in use amongst Women and Poets, the King and Nobility generally speaking the *Turkish* Language.

Of the *Chinese*.

The *Chinese* Language hath above Sixty Thousand Letters, yet not above Three Hundred Words, which are for the most part all Monosyllables; they pronounce it with a various Tone, denoting the Signification of a Word by the founding of it, which is alterable in the Sense, according to the Sound; and by this means the *Chinese* are said to Sing rather than Speak.

Some

Some Chinese Characters.

一 One.	十 Ten.
土 Earth.	王 King.
珠 Pearl.	生 Life, or Creation.
	主 Sir.

By which may be seen how small a matter alters their Signification.

Note, The *Chinois* Print not as we use, from the Left Hand to the Right; nor as the *Jews* and *Dacians*, from the Right Hand to the Left, but from the Top of the Leaf downwards to the Bottom.

The *Indians* have Thirty Three Letters in their Alphabet, and write from the Left to the Right in the Peninsula beyond *Ganges*, contrary to the Custom of other *Indians*. The *Gazarète* Tongue is the Chief in the *Mogul's* Empire, tho' they Pray in *Arabick*, and at Court speak the *Persian*.

Of the *Indian*
Tongues.

The *Japanaise* Language is very curious, wherein they have several Words to express one Thing, some in Derision, others in Honour; some for the Prince, others for the People; as also for the Quality, Age, and Sex of the Speaker, and Person spoke to.

The *Japanaise*.

The *Ethiopian*, or *Abassine* Tongue, seems to have some Affinity with the *Hebrew* and *Chaldaick*; and is thus far singular, that the *Abyssins* reckon our First Letter *A* their Thirteenth. See *Ludolphus's* Grammar.

Abassine Tongue.

The *Brasilians* cannot Pronounce the Letters *L. F. R.* the reason of which being once demanded, one made Answer, Because they had amongst them neither *Law, Faith, nor Rulers.* Heylin. 799.

The Languages of other Countries in *Africa* and *America*, are but meer Jargons, wholly rude and harsh to themselves, and unknown, as well as unintelligible to us; the *Europeans*, where they spread their Colonies and Families, use the *European* Language.

The Difference and Affinity of several Languages may be seen from that famous Sentence of *Habakkuck*, 2. 4. *But the Just shall live by his Faith*, expressed in Thirty Three Languages, or several Tongues, as follow, which we are forced to set down in our common Printing-Letters, the Printer not having the proper Characters of those Countries.

- | | | |
|--------------|-------|---|
| 1. Hebrew, | — — — | { Ve-tzaddiq Be emunatho jich-jeh. |
| 2. Chaldee, | — — — | { Vetzaddikaia al Kushethon jith kaijemun. |
| 3. Syriack, | — — — | Decana min Himenuta Nacha. |
| 4. Arabick, | — — — | Vaadili Minalaj Manj jaccaij. |
| 5. Greek, | — — — | { Ho de Dikaïos ec fteoos mee Zefetaij. |
| 6. Latin, | — — — | { Justus autem ex fide sua vivet. |
| 7. Spanish, | — — — | { El justo en su fe bivira (<i>Pronounced</i> vivira.) |
| 8. Italian, | — — — | { Il Giusto vivera perla sua Fede (<i>Pronounced</i> Justo.) |
| 9. Portugal, | — — — | { Oa justa em sua Fei vivara (<i>Pronounced</i> O Fey.) |
| 10. French, | — — — | { Mais le Just vivra en sa Foy (<i>Pronounced</i> Mai.) |

11. *Armenian*, — — — { Shedeck Mart eer Serdoven Kapree.
12. *Persian*, — — — { Raft Adem eis Fiker hod Migzeratt.
13. *Georgian*, — — — { Martalee Katseea tavis Seemartlitta Darchebis.
14. *Javan, Moollay*, — — — { Orany Betool Deah-Pooniah Emaun Ollough Cabbool.
15. *East-Indian, Surat*, — — { Neek Zaut Ooufkah Ema un coodawkah haut.
16. *West-Indian, New-England*, — — { Sampivenfseanuta pish poman-tum Kiske Wunnamptamonke.
17. *Hungarian*, — — — { Azigaz Ember pedig hit altel el.
18. *Transilvanian*, — — — Affigas emberpedik itt altel el.
19. *Moldavian*, — — — { Wom Kudireptate Kulege alui Trayesti.
20. *Tartarian, Cossackian*, — — { Ho Dikaïos Athropos Metin Biste too Zee.
21. *High German*, — — — { Denn Der Gerechte bebet (*Pronounced* Dan-D'arl'abet) Sines Glaubens.
22. *Bobemian*, — — — { Gest Sprawedliwy (*Pronounced* Spraved livy) ziw Bude z wijry.
23. *Slavonian*, — — — { Pravedne oot vearea zeove Boudet.
24. *Muscovian, Russian*, — — { Prawidlievy zijut prze wiare (*Pronounced thus*, Praviedlievy tzewut pertze vee-yare.)
25. *Turkish*, — — — { Sadick Adam onung ichtikat eyla deriller.

See at the end of
Rarities, in Gre-
sham College Ra-
rities.

The Ancient *Saxons* Letter or Character was formerly used very much in *England*; and for that it may be often met with in Ancient Manuscripts, or the like, I shall Insert them here.

Æ for Æ, € æ, Ð Th, ð th, þ th, 7 and, ƿ that.

The meaning of some great Letters that are often met with, and to be found in Authors.

A.	} Stands for	Aulus.
A. C.		Anno Christi.
A. D.		Anno Domini.
A. M.		Anno Mundi.
Ab U. C.		Ab Urb Condita.
C. c. v.		Caius. chap. verse.
D. M. S.		Diis Manibus Sacrum.
D. O. M.		Deo Optimo Maximo.
D. d.		Decius. denarius.
D. D.		Doctor of Divinity.
F. E. R. T.		Fortitudo ejus Rhodum tenuit.
F. R. S.	Frater Reg. Societat.	

G. Gen.	Stands for	Gaius. Genesis.
H. M. H. N. S.		Hoc Monument. hæredes non sequitur.
J. C. i. e.		Julius Cæsar. id est.
L. L. D.		Lucius. Leg. Doctor.
M. M. A.		Marcus. Magister Artium.
M. P. M. F.		Hoc Monumento Posuit vel Fecit.
MS.		Manuscript.
P.		Publius.
P. R.		Populus Romanus.
P. C.		Patres Conscripti.
Q. q.		Quirites Quintus. quasi.
Sp.		Spurius.
S. P. Q. R.		Senatus, Populus Que Romanus.
S. T. T. L.		Sit Tibi Terra Levis.
S. T. D.		The same as D. D.
T. V. v.		Titus Vespasian. Vide.
T. C.		Tua Clementia.

Characters used for Numerals.

I.	Stands for	1. or Unus.
V.		5. or Quinque.
X.		10. or Decem.
L.		50. or Quinquaginta.
C.		100. Centum.
D. or ID.		500. Quingenti.
M. or CID.		1000. Mille.
IDD.		5000. Quinque Millia.
CCIDD.		10000. Decem Millia.
IDDD.		50000. Quinquaginta Millia.
CCCIDDD.		100000. Centum Millia.

IV. is Four, but VI. is Six.

IX. is Nine, but XI. is Eleven, and so of other Numbers.

Of the English Tongue.

The *English* Language (or as some will have it a Speech) is compounded of *Saxon*, *Dutch*, *French*, and *Latin*, participating of the Perfections of all, and is neither so boisterous as the *German*, nor effeminate as the *French*; yet as significant as the *Latin*, being so much refined of late Years, that it is necessary to know the *Latin* Tongue to understand the *English*. It partakes most of the *Saxon*, as appears by our common Appellations of Names, as also of Titles of Honour, and Ignominious Terms, as such as *Knave*, &c. For which see *Verstegan's* Antiquities.

For Observations upon our Letters, Note,

A is not heard in *Pharaoh*, as if *Pharoh*; nor but one *a* is to be heard in *Isaac*, *Aaron*, &c. Of A.

B is not founded in *Climb*, *Dumb*, *Thumb*, *Lamb*, &c. Of B.

C before *a* and *o* and *u*, sound like *K*, as *Cat*, *Cord*, *Cup*; but before *e*, *i*, *ee*, *ie*, and *y*, like *s*, as *Cedar*, *Cistern*, *Exceed*, *Cieling* of an House, *Cyder*, *Cynthia*, *Cyprus*; nor is not heard in *Indictment*. *C* goes before *k*, as *Black*, *Back*, *Lack*, *Track*, *Thick*, *Lock*, *Stuck*, &c. except a Consonant before *k*, as *Thanks*, not *Thancks*, &c. but *c* goes not before *k* in *Bake*, *Lake*, *Wake*, *Make*, &c. *Ch* have a particular sound in *English* Words, as *Arch*, *Rich*, *Chance*, and *Roch*, *Tench*, *Perch*, *Dutch*, &c. but in *Hebrew*, like *K*, as *Rachab*, *Nebuchadnezzar*, *Antiochus*, &c. except *Rachael*, *Michael*, *Archangel*, &c. which last differs in sound

found from *Archbishop*, *Architecture*, which are pronounced as *Arch* before.

Of D. D is not heard in *Wednesday*, as if written *Wensday*; but *d* shews *Edge* from *Egg*, *Badge* from *Bag*, &c.

Of E. E distinguishes *Fire* from *Firr*, *Sire* from *Sir*, &c. and in Foreign Words makes a Syllable, as *Fesse*, *Epitome*, *Candace*, &c.

Of F. F still keeps its force, and when 'tis the last Letter of a Word, is always doubled, as in *Muff*, *Huff*, *Stuff*, *Stiff*, *Whiff*, &c.

Of G. G sounds double, as *Gold*, *Gorge*, and both hard and soft in *Gorgeous*, as if writ *Gorjeous*. But when *a*, *e*, *i*, *o*, or *u*, follows the latter sound, instead of G must be *J* Consonant, as *James*, *Jewel*, *Jilt*, *John*, *Judas*, &c. G is not heard in *Pblegm*, *Sign*, *Campaign*, *Reign*, *Feign*, *Design*, &c. Gh sounds like ff in *Laugh*, *Cough*; but *Scoff* is otherwise spelt, though of like sound; nor is gh sounded in *Nigh*, *Night*, *Might*, *Ought*, *Caught*, *Wrought*, *Sought*, &c.

Of H. H is held to be no Letter, but only a sound of Aspiration; nor is it pronounced in *School*, *John*, *Thomas*, the Herb *Thyme*, *Rhime*, but seems to bear some sound in *Hymn*, *Herd*, *Heaven*, and *Hear*, which without it would be *Ear*.

Of I. I Vowel is not heard in *Suit*, *Parliament*, *Fruit*, *Heighth*, &c. and it never ends *English* Words, tho' very often Foreign Words; it is sounded like *u* before *r*, as in *Bird*, *First*, &c.

Of K. K is lost in *Physick*, *Arithmetick*, *Magick*, *Stick*, *Pick*, *Prickle*, &c.

Of L. L is now used single in Monosyllables, and in Words exceeding one Syllable, it ought to be often single if it be the last Letter of a Word, as in *Civil*, *Partial*, *Substantial*, as
coming

coming from the *Latins*, which do not double the *l*; but in *Bull*, *Full*, *Dull*, *Trull*, *Roll*, 'tis otherwise. And if a Consonant be next before *l* joined to a Vowel, at the end of a Word, they must not be parted, as *Bi-ble*, *Af-fa-ble*, *A-xle-Tree*; and the same Rule for *r*, as *Mi-tre*, *Scep-tre*, &c.

M always keeps its sound so full, that the Letter

Of M.

N is not heard in *Solemn*, *Autumn*, *Hymn*, &c.

Of N.

O is not sounded in *People*, *Jeopardy*, as if written *Peeple*, &c.

Of O.

P is not heard in *Psalms*, *Contempt*, *Xpofer*, i. e. *Christopher*. *Ph* sounds like *f*, in *Physick*, *Triumph*, *Ralph*, *Cough*, &c.

Of P.

Q hath always *u* Vowel after it; and in Words coming from *quus*, you must write *que*, as in *Oblique*, *Cinquefoil*, &c.

Of Q.

R is ever expressed in *English*, tho' never so often inserted in a Word, as in *Rural*, *Rare*, &c.

Of R.

S is lost, and may be termed a Liquid in *Isle*, *Island*, *Viscount*, &c. The two first Words are in *Acts* 28. 9. 11. *S* sounds like *Z* in *Ease*, *Please*, *Praise*, *Raise*; and *z* like *s* in *Raze*; a long *s* must never be used at the end of a Word, as *Sustains*, &c.

Of S.

T with an *i* generally sounds like *si* before a Vowel, as in *Action*, *Inclination*, *Creation*; in *Petition* the last *ti* sounds like *si*; *Accession* must not be writ *ti*, nor *Division*, nor *Admission*, nor any Word which is not writ with a *t* in the *Latin*.

Of T.

V Consonant and *U* Vowel must be carefully distinguished both in Writing and Reading, as *Vulgar* and *University*, which are different, as also *Vote* and *Ugly*, &c. *U* Vowel is not heard in *Guard*, *Guide*, &c. and it but seldom ends *English* Words.

Of V. & U.

W is

Of W.

W is not founded after *o*, as in *Window*, *Blow*, &c. except in *Sow*, *Vow*, *Cow*, *How*, &c. nor before *r* in *Wretch*, *Wright*, *Wrinkle*, &c. *W* is a double Consonant, made of Two *V* Consonants, which will not begin any Syllable, and therefore is in Spelling put to the first Vowel of any Word.

Of X.

X is also double, made of *c* and *s*, and under the same Rule as *W*, for the same reason.

Of Y.

Y is used in *Greek* Words, as *Synagogue*, *Physick*, &c. and at the end of *English* Words, as *My*, *Fly*, *By*, *Sty*, *Cry*, &c. sounding as *i* Vowel, or *ie*; it is a Consonant before a Vowel, as *Youth*, *Yonder*, *Year*, &c. and a Vowel after a Consonant, as in the Two *Greek* Words before.

Of Z.

Z is founded like *S*, and seldom used, which all Writers agree upon, and were more properly (if Paradoxes may be accepted) termed *ez*, than *zed*, or *izord*, which any Body must allow that doth pronounce *Nebuchadnezzar*, not *Nebuchadnezedar*, or *Nebuchadneizord-izordar*.

In the *English* Tongue many Words, tho' they bear a like Sound, have a different Sense, and must be so distinguished in their Orthography, or Writing, as,

Words of like Sound, different in their Orthography and Meaning.

An *Heir* (Eldest Son) as I did *Hear* (one of the Senses) taking the *Air*, had his *Hair* changed white with a strange *Hoar* Frost, looking as old Mens Heads *Are*; his Friends persuaded him to come *Here*, but he unconcerned went to course a *Hare*.

Two Men carrying a Vessel of *Beer* upon a *Bier*, there came a *Bear*, and seizing them, tore all their Cloaths off, 'till they were quite *Bare*, yet were they content to *Bear* with that, so they might but save their Lives.

The

The like Examples might be made in many other kinds of Words, but having treated thus much as to the Pronunciation of Words, and the Office of Letters, &c. it may not be improper to add the

Points for true Orthography.

A Point is the Separation of a Speech, which is Twofold, 1. Of an Imperfect, and 2. Of a Perfect Sentence. The Points of an Imperfect Sentence are, 1. A *Comma* (,) which stays the Breath without taking Breath, and is made between the Seventh and Eighth Syllable; 2. A *Semicolon* (;) which is about the middle Space between the *Comma* and *Colon*, as also half the Space between the *Colon* and *Period*. Those Points for distinction of a Perfect Sentence are, 1. A *Colon* (:) whereby the Breath is stopped for a longer Space than in the former Points, and is set about Eighteen Syllables from the last Period; 2. A *Period* (.) which is when, with a full Breath deposited, a Perfect Sentence is concluded. And this *Period* often divides the part going before, called *Ill protasis*, from that following, called *Apodosis*.

The *Parenthesis* () includes some Words which, if left out, would not break or alter the Sense, or smoothness of the Stile.

The *Interrogation* (?) is made at asking a Question.

Note of *Admiration*, or *Exclamation* (!).

Hyphen (-) Couples together Two Words, as *Well-Spring*, and is used when a Word is parted into Syllables at the end of a Line.

The *Section* (§) divides a large Discourse into several Parts.

Parathesis

Points for Orthography.

Comma (,)

Semicolon (;)

Colon (:)

Period (.)

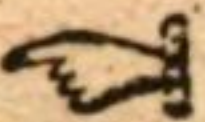
Parenthesis ()

Interrogation (?)

Exclamation (!)

Hyphen (-)

Section (§)

- Parenthesis** [] *Parenthesis* [] is used in Expositions, called also a *Crochet*.
- Asterism** (*) *Asterisk*, or *Asterism* (*) refers to the Margin, &c.
- Obelisk** (†) *Obelisk* (†) Notes from the Matter to the Margin.
- Index**  An *Index*  Notes from the Margin to the Matter.
- Citation** (“ ”) Note of *Citation* (“ ”) when Authors are cited Word for Word.
- Apostrophe** (') *Apostrophe* (') is when a Letter is purposely left out, as 'Tis, for *It is*; 'Twas, for *It was*.
- Induction** (^) *Induction* (^) is made to bring in something omitted.
- Diaireseos** (..) *Dialysis*, or *Diaireseos* (..) is used to part a Diphthong, and is made over the Vowels, *Aër*, *Poëta*, that it may not be pronounced *Ær*, *Pæta*.
- Grave Accent** (` ) *Grave Accent* ( `) used over a Vowel when the Voice is depressed.
- Acute Accent** (´) *Acute Accent* (´) when the Voice is to be raised higher.
- Craſis** (^) *Craſis* (^) is used over Circumflex Syllables, long by Nature, as *Dî pro Dij*, *Amârunt pro Amaverunt*.
- Paragraph** (¶) *Paragraph* (¶) is an absolute Passage or Article, and must not be begun in the middle of a Line.

The Figures belonging to Orthography,

Are Twelve, whose Use is chiefly to allow some Liberty to Poets, for making their Verses run smoothly, which they call *Carminis Gratia*. They are, 1. *Prothesis*, which adds a Letter or Syllable to the beginning of a Word; 2. *Apheresis* takes away a Letter or Syllable

Syllable from thence; 3. *Syncope* taketh away a Letter or Syllable from the middle of a Word; which, 4. *Epenthesis* addeth thereunto; 5. *Apocope* takes away a Letter or Syllable from the end of a Word; which 6. *Paragoge* addeth thereunto; 7. *Antithesis*, and 8. *Antistæch-on*, change one Letter for another; 9. *Metathesis* misplaceth a Letter, as for *Thymber* is writ *Thymbre*; 10. *Tmesis* divides or separates the parts of a Compound Word, by Interposing something between them; 11. *Synæresis* contracteth Two Syllables into One; 12. *Dieresis* divideth a Syllable, or of One maketh Two. See the Grammars, particularly *Clare's* Compleat System of Grammar.

For Method of Stile in Writing and Speaking, see the Treatise of *RHETORICK*.

Note, The Letters or Characters of the Ancient *Hetrurians* are quite lost, tho' formerly in high Esteem amongst the *Romans*, as *Livy* and *Pliny* witness; and altho' some of them are to be found on Ancient Coins, yet their Signification are altogether unknown.

The People of *Biscay* in *Spain* use a Language different from the rest of *Spain*, and are reported to have continued without great Alteration since the Confusion of *Babel*. In like manner the *Arabick* continueth uncorrupted in the Hilly Parts of *Granada*; the Tongue of the Old *Britains* in *Wales*; and the Ancient *Epirotick* in the High and Woody Parts of that Country.

The Language most Pure in the Mountainous and Unconquered Part of a Country.

Mithridates, King of *Pontus*, was a Man of excellent Memory, and could speak no less than Two and Twenty Languages.

Eminent Persons skilled in several Languages.

Josepb Scaliger was skilled in Thirteen Languages, viz. *Spanish*, *French*, *Dutch*, *Italian*, *Latin*,

Of Grammar and Languages.

Nubian, Chaldean, Syriack, Arabick, Persian, Latin, Greek, Hebrew, and English.

Sir Kenelme Digby was skilled in Six several Languages.

Amalasunta, a Gothish Queen in Italy, A. C. 527. was skilled in the Language of all Nations that had any Commerce then with the Roman Empire, which were many.

Elizabeth, Queen of England, could discourse in Greek, Latin, French, Dutch, Tuscan, Spanish, and English.

Frederick II. Emperor of Germany could speak Fourteen several Languages.

For the best Authors of several Languages, see in the Treatise of *ARITHMETICK*.

Many GRAMMARS have been Publish'd throughout the World by divers of the Learned, among whom come the following

AUTHORS,

Charles the Great's German Grammar, Buxtorfius's Hebrew Grammar, Bithner's Hebrew Grammar, Busby's Greek Grammar, Cockyn's Greek Grammar, Gretzer's Greek Grammar, Lilly's Latin Grammar, Lane's Latin Grammar, Clare's Latin Grammar, Berault's Latin Grammar, Fax Nova, and many others. Festeau's French Grammar, Mauger's French Grammar, Ludolphus's Ethiopian Grammar, Smith's Grammar of Four Languages, Colson's Grammar of Three Languages, Johnson's Grammar, Walker's Royal Grammar.

OF HIEROGLYPHICKS.

THE *Egyptians*, instead of using Letters, or Characters, used certain Portraictures of several sorts of Creatures, called *Hieroglyphicks*, under which Forms they expressed their Conceptions; therefore, to unvail great part of that Mythological Learning lay wrapped in those dark and cloudy Complications, is the Purpose of what followeth.

For GOD, they Painted a Falcon, as well Hieroglyphicks. for that he soared so high, as also for that he governeth all lesser Birds.

For *Eternity*, they Painted the Sun and Moon, believing they were without Beginning or End.

For a *Month*, a Palm-Tree, which sends forth a Branch every New Moon.

For the *Year*, a Snake with the Tail in its Mouth.

For any Thing abominable to the Gods, they Painted a Fish, because never used by the Priests in their Sacrifices.

For *Nature*, a Boy involved and enveloped with a Net.

For *Mutual Vicissitude*, the Fig-Tree, whose old Fruit never falls off, 'till the new ones appear.

For *Magnanimity*, a Lyon Rampant; For *Circumspection* and *Caution*, Regardant; For *Expedition* or *Celerity*, Saliant; For *Counsel*, Seiant; For *Prudence*, Passant; For *Defence*, Gardant.

For *Fidelity*, *Justice*, and *Piety*, an Elephant.

For *Physick* and *Physicians*, a Dog's Tongue, which Heals with Licking.

Of Hieroglyphicks.

For *Murder*, Impudence, &c. a Sea-Horse, which destroys its Sire.

For *Silence*, the Woolf, which is said to make Men Dumb at his Sight.

For *Musick*, the Swan and Grasshopper, the first of which is said to Sing sweetly just before she dies.

For *Wise Councils*, Three Heads Conjoined.

For *Vigilance*, the Goose and Dog, the first of which saved the Capitol.

For *Maternal Affection*, the Pelican, which will strike its own Breast to force out Blood for Nourishment of its Brood.

For *Housewifry*, the Industrious Tortoise was decyphered.

For *Safety and Preservation*, the Ichneumon. See in *ANIMALS*.

For *Hereticks*, foul Serpents, and such indeed they are to the Church.

For *Winter*, a Rapacious fierce Woolf.

For *Spring*, a Fawning, or Loving Dog.

For *Summer*, a flaming angry Lyon.

For *Autumn*, a Serpent distilling Venome into the Body of a Man.

For the Swiftness of the *Sun*, a round *Discus* in the Hand of *Osiris*.

For an *Husbandman*, the Portraicture of a Labouring Ox.

For *Confederacy and Courage*, Three Hearts Concentered.

For *Unity in Action*, Three Arms Conjoined.

For *GOD* (besides the Falcon before) a Scepter with an Eye upon it.

For *Integrity*, Fire and Water were the *Hieroglyphicks*.

For *Sagacity*, a Dog's Head.

For a *Worthy Prince*, a Bee making of Honey.

For the *Sun*, a Hawk, because of his quick Sight and Motion.

For

For the *World*, the Beetle, which (saith *Horus Apollo*) when it hath a mind to bring forth, takes the Excrement of an Ox, which having wrought into small Pellets round as the World, it turns them about from East to West, it self in the mean time (as if she intended to summon great Nature to these Travails) turning to the East.

In the Hieroglyphical Tables of Cardinal *Bembus*, so often mentioned by *Athanasius Kircherus*, in his *Oedipus Copticus*, there is set down the Figure of the *Scarabæus*, or Beetle, for the Trunk, but with the Head and Face of a Man, supporting a little Table, with this Inscription, Φύλλο; about the Neck, a Number of Concentrick Circles, to express the Orbs and Motions of the Heavens; upon the top of the Head, a Face of the Encreasing Moon, to imitate her monthly Revolution; within that, a Cross † Mark, for the Four Elements, weaving together all Things above a winged Globe, and wreathed about with Two Serpents. The winged *Sphere* wreathed about with Serpents, is the *Hieroglyphick* of the Soul and Spirit of the Universe; and the *Humane Face*, is to be understood the Sun and his Courses, saith *Barachias Albenephi*.

For an *Embrio*, the *Hieroglyphick* was a Frog.

He who desires more Plenary Satisfaction herein, let him take it from the Hands of these

A U T H O R S,

Barachias Albenephi, of the Ancient Egyptian Learning, Cardinal *Bembus*'s Hieroglyphical Tables, *Athanasius Kircherus*'s *Oedipus Copticus*, *Hieroglyphicks* of *Valerianus*, *Plutarch*'s Treatise of *Isis* and *Osiris*, *John Pierrius*'s Commentary, the Treatise called *Orus Apollo*. See *Causin*'s Christian Hieroglyphicks.

Of POETRY.

POETRY, as *Strabo* saith, was the first Philosophy that ever was Taught; nor were there ever any Writers thereof known before *Musæus*, *Hesiod*, and *Homer*; by whose Authority *Plato*, *Aristotle*, and *Galen* determine their weightiest Controversies, and confirm their Reasons in Philosophy. And what were the Songs of *Linus*, *Orpheus*, *Amphyon*, *Olympus*, and that Ditty *Jopas* sung to his Harp at *Dido's* Banquet, but Natural and Moral Philosophy, sweetned with the Pleasance of Numbers, that Rudeness and Barbarism might the better Taste and Digest the Lessons of Civility?

The Poet is made by Miracle in his Mother's Womb, each Man bringing with him an Innate Property thereto at his Time of Birth. Hence *Tully* is said to be long e're he could be delivered of a few (and those but poor) Verses, whilst *Ovid* was so backward in Prose, that he could almost speak nothing but Verse.

Much hath been writ in Praise and Dispraise of this Art, some calling it a *Madness* in the Mind, others again affirming it to be in some Sense a *Prophetick Spirit*, calling the Psalms of *David* but a *Divine Poem*, going sometimes in one Measure, sometimes in another; and that the Song of *Solomon* is a continued *Allegory* of the Mystical Love betwixt Christ and his Church; and that Theatres and stately Amphitheatres were not raised for Historians, Philosophers, Lawyers, Physicians, &c. but only for to represent the Poetry of Poets, and their Works. And indeed *Alexander*, by read-
ing

ing *Homer* was especially moved to go through with his Conquests, as also our *Bards* gave no small Edge to the Valour of our ancient *Britains*, as is remembred by *Athenæus*, *Lucan*, &c. which is no small Addition to its Praise. And every one knoweth almost how dear the Works of *Homer* were unto *Alexander*; *Euripides* to *Amyntas* King of *Macedon*. *Virgil* to *Augustus*, and *Alphonsus* King of *Naples*; *Theocritus* to *Ptolomy* and *Berenice* King and Queen of *Egypt*; the stately *Pindar* to *Hiero* King of *Sicily*; *Ennius* to *Scipio*; *Ausonius* to *Gratian*, who made him Proconsul, and our *Chaucer* to King *Richard II.* *Gower* to our *Henry IV.* &c. And *Charlemagne*, *Augustus Caesar*, *Octavius*, *Adrian*, *Germanicus* disdained not only to make Poesie, but are Eternized for their Skill therein, among a Croud of others Ancient and Modern, to the Number of about Three or Four Thousand. See *Theatrum Poetarum*.

Yet are Poets by some highly accused for their monstrous Fables of the Birth of *Venus*, the Fight of the *Titans*, the Infancy of *Jove*, the Deceits of *Rhea*, and Cheat of the Stone, *Saturnus* Bonds, the Giants Rebellion, the Thievery and Punishment of *Prometheus*, the Wanderings of *Delos*, the Travail of *Latona*, the Slaughter of *Python*, the Treachery of *Tyrus*, *Deucalion's* Flood, Stones turned into Men, *Niobe* into Stone, the Butcheries of *Iacchus*, the Fraud of *Juno*, *Semele's* Conflagration, the double Progeny of *Bacchus*, and whatever is reported of *Minerva*, *Vulcan*, *Castor*, *Pollux*, *Erichthonius*, *Orychas*, *Theseus*, *Ægeus*, *Hellen*, *Hypolitus*, *Minos*, *Cadmus*, *Pantheos*, *Attens*, the Twelve Labours of *Hercules*, Fight of the Sun with *Neptune*, *Athamas's* Madnefs, *Io* turned into an Heifer, *Læda's* Swans, *Argos* her

See *Agrippa*.

Keeper killed by *Mercury*, with those Stories of *Pelevs*, *Jason*, *Medæa*, *Danae*, *Perseus*, *Gorgon*, *Cassiopea*, *Andromeda*, *Orpheus*, *Orestes*, the Travels of *Æneas* and *Ulysses*; *Circe*, *The-lagon*, *Æolus*, *Palades*, *Nauplius*, *Ajax*, *Daphne*, *Ariadne*, *Europa*, *Phædra*, *Pasiphae*, *Dedalus*, *Icarus*, *Glaucus*, *Atlas*, *Geryon*, *Tantalus*, *Pan*, *Centaur*s, *Syrens*, *Satyrs*; of the Rivers *Styx*, *Lethe*, *Acheron*, burning *Phlegeton*, and many other Inventions of the Brain: Of which see more hereafter in the Explanation of some Poetical Fictions.

The Art of P O E T R Y teacheth how to know the Quantity of Syllables, whether short or long, &c. and teacheth what Feet every Verse is compounded of, because Feet are made of Syllables of different Quantities: Of which, presently.

Sapphick Verse.

Pindarick.

Iambick.

Heroick.

Elegiack.

A Poem.

V E R S E S are either denominated from their Inventors, as Sapphick Verses from the Greek Poetess *Sappho* the first Inventress. Pindarick from *Pindarus*, or from the Feet whereof they consist. Iambick, from the *Iambicks*, of which they are composed, or from the Matter they express. Heroick, from the Praises of Great Men. Elegiack, from sad Narratives, or from the Number of Feet.

Verifying.

A P O E M implieth a Fiction: Upon this Account Verses that contain no Fiction are not strictly considered a Poem, and he that gives a meer matter of Fact, without any ingenious Fiction adapted to the Subject, is rather stiled a Versificator than a Poet.

P R O S O D I A is the last Part of Grammar, and teacheth how to make Verses well and with true Judgment, in which Two Things are to be observed, 1. The Quantity of Syllables. 2. The way to make Verse: The last Syllable of each Verse

Verse is accounted common, and a Verse is made up of Feet, which Feet are made of Syllables disposed in a just or right Order.

A Foot is the setting or placing together Of a Foot. Two Syllables or more, according to the certain Observation of the Quantities; and is fourfold, 1. A *Spondee*, which consists of Two long Syllables, as *Vertue*. 2. A *Trochee*, which consists of a long Syllable first, and a short one after it. 3. An *Iambick* Foot, which consists of a short Syllable first, and a long one after it. And 4. A *Dactyl* Foot, which consisteth of Three long Syllables, the first long, the other Two short, as *Mittere*.

VERSE is a Speech bound to a just and lawful Number of Feet, of which are Seven kinds, 1. *Hexameter* or Heroick Verse, which consists of Six Feet in Number, but of Two Feet only in Kind, a *Dactyl* and *Spondee*. The Fifth Place claims properly a *Dactyl* to it self, the Sixth claims a *Spondee*, the rest any Foot even as we please. 2. *Pentameter* or Elegiack Verse, which consists of Two *Dactyls*, or Two *Spondees* with a long Syllable, afterwards of Two *Dactyls* with another long Syllable. 3. *Phaleucick* or of Eleven Syllables, which consists of a *Spondee*, a *Dactyl*, and of Three *Trochees* at last. 4. An *Asclepiade* Verse, which consists of a *Spondee*, *Dactyl*, and a long Syllable, afterwards of Two *Dactyls*. 5. A *Sapphick* Verse consists of a *Trochee*, a *Spondee*, and a *Dactyl*, and of Two *Trochees* at last. 6. An *Adonick* Verse, which consists of a *Dactyl* and a *Spondee*. And 7. An *Iambick* Verse, which consists only of *Iambick* Feet.

The Scansion of a Verse is the measuring of a Verse into every or one of the Feet. To Scanning belong Six Figures, 1. *Synalepha*, which

which cuts off one Vowel before another. 2. *Eclipsis* takes away the Letter *m*, with its precedent Vowel at the end of a Word. 3. *Synæresis*, which is the contraction of Two Syllables into One, as *Æripides* for *Aeripides*, *Alvo* for *Alveo*. 4. *Diæresis* parteth a Syllable and maketh of it Two Syllables, as *Evoluisse* for *Evolvisset*, *Evohe* for *Eve*. 5. *Systole*, which makes a long Syllable short, and 6. *Dyastole*, which makes a short Syllable long.

See the Figures belonging to Orthography in GRAMMAR.

Of Epic Poetry.

The most considerable Thing next, is the Conduct and Design of a Poem &c. in whatever kind of Poetry it is, whether *Epic*, *Lyric*, *Epænetick*, *Bucolick*, *Dramatick* or *Epigram*, (of *Elegiack* we have spoke before) under one of which all Poetick Design is included. The *Epic* is of the largest Extent, and includes all that is Narrative either of Things or Persons, the highest Degree whereof is the Heroick. This, as Tragedy (the highest of the Dramatick) consists in the greatness of the Argument, and that is what makes up the Perfection of a

Of Lyric Poetrie.

Poet. The *Lyric* consists of Songs or Airs of Love (or other the most soft and delightful Subject) in Verse apt for Musical Composition.

Of Epænetick.

The *Epænetick* comprehends the *Hymn*, the *Epithalamium* (or Nuptial Song) the *Genethliacon*, or what else tends to the Praise or Congratulation of Divine, or on Earth, Eminent Persons.

Bucolick or Eclogue.

The *Bucolick* or *Eclogue* pretends only the familiar Discourse of Shepherds about their Loves, or the like Concernments, (tho' higher Matters are often misteriously pointed at therein.) This is sometimes called Pastoral.

Elegiack.

The *Elegiack* seems first intended for Complaint of Crosses in Love, but since is become applicable

cable to all manner of Subjects and various Occasions. *Epigram* is the humblest Part of Poetry, consisting rather of Witty Conceit, than Poetical Invention. Epigram.

The Dramatick comprehends *Satyr*, and her Two Daughters *Tragedy* and *Comedy*. *Satyr* is a snarling invective Poem. *Tragedy* is sometimes in Rhime, sometimes in Blank Verse, which is most proper and natural, since Rhime is too Stiff, and constrained for mutual Conversation. This treats only of the Actions and Concernments of the most noble Heroes and Princes, whereas *Comedy* sets before us the Humours, Converse and Designs of the more ordinary Sort of People, and uses many Witty, Jocular and Pathetical Expressions. *Farce* descends yet lower to the Grimace and Buffoonry of the most ordinary Sort, and being wholly composed of Ridicule, and the like, never exceeds her stint of Three Acts, whereas the others contain Five, generally allowing *Tragedy*, because of its Heroicks Two Thousand Lines, and *Comedy*, which is expressed in a more common and fleeting manner, Two Thousand Five Hundred, about Five Hundred to each Act. Satyr.
Tragedy.
See Poetical Number in Rhetorick.
Comedy.
Farce.

The Rules of the *Drama* are best discovered from good Observation, wherein Historiographers and Geographers are to be consulted for the Concordance of Times, and Cognizance of Customs, Manners, Laws, &c. in Use among the Inhabitants of the Earth, which must ever bear great Consideration as to the Scenes of their *Drama*. Philosophers will furnish you with Knowledge of Science, necessary for their framing Similies, in which you must put your Invention to the Test for adapting Matters and Words, and often your Plot, tho' that is often

ten owing to History, but not without some little Inventions of Ornament thereto. The Names must be as proper as may be to the Country. But the Characters (especially in Comedy) ought as much as possible to be new. The managing of the Underplots require a good Judgment, which yet may not meet with Recompence sufficient, Criticks being ever sparing of their Praise, which, and for that it is a starving Qualification, is better avoided than sought for, yet who desires to know more thereof may read Mr. *Dryden's* Dramatick Essay upon Poesie and other Works.

To give the Reader a Relish of the Mythology of Poets, and to enable him to guess the better at many other Fables of the like Nature, plentiful in their Works, I shall now insert

An Explanation of some Poetical Fictions.

Explanation of
Hercules's Twelve
Labours.

Hercules Twelve Labours.] *Hercules* means the Sun, as the Greek Name sheweth, which calls him the Glory of the Air, and his Twelve Labours are the Twelve Signs of the *Zodiack* thro' which he laboureth every Year: He had the Name of *Alcydes* from Strength, for like a strong Giant he rejoiceth to run his Course. His beloved *Hebe*, Goddess of Youth, is the Spring Time, wherein the Youth of the Earth is renewed. His overflowing *Geryon*, and rescuing his Cattle, is, that the Sun by destroying Winter preserves the Beasts.

Hebe.

Æolus.

Æolus God of the Winds.] Was a Man in *Æolia*, who found out and taught what the Winds and Navigation were.

Saturn

Saturn devouring his Children.] *Saturn* Saturn.
signifies Time, which cuts down as with a Sickle, and consumes all Things.

Atlas bearing Heaven on his Shoulders.] *Atlas.*
Atlas was the Name of a King who was well skilled in Astronomy; tho' some think this Fable was occasioned by the Hill *Atlas* in *Mauritania*, which is of such height it seems to bear or touch the Heavens.

Orpheus making Trees and Woods to follow him.] *Orpheus.*
Orpheus was an excellent Musician, and playing before a Company of mad Women assembled in a Wood, so pacified them, that they followed him with Boughs in their Hands.

Medea the Sorceress restoring old Æson.] *Medea.*
Medea was a Woman well skill'd in Herbals, and had a Receipt to make White Hairs, Black, wherefore she was said to renew Youth. See in Remedies and Cures, &c. *Physick*.

Prometheus stealing Fire from Heaven, &c.] *Prometheus.*
Prometheus was a wise Man, and on the highest Part of Mount *Caucasus* studied the Nature of the Stars, and instead of putting Fire, instructed the dead and claeſy Carcaſſes of Mankind with Wiſdom, and the inward Care he had to accompliſh his Deſires, might be compared to a Vulture gnawing his Entrails, according to the Opinion of *St. Auguſtine*.

Endymion kiſſed by Luna on Mount Latmus.] *Endymion.*
Latmus is a Hill in *Anatolia*, where one *Endymion* found out, and ſtudied the Changes and Courſes of the Moon.

Niobe weeping her ſelf to Stone.] *Niobe* for *Niobe.*
her Pride had her Twelve Children ſlain before her Face, wherefore ſhe growing ſtiff with Grief and Speechleſs was feigned to be turned into a Stone. Others ſay ſhe Erected a Marble Tomb over her ſelf and Children while ſhe was Alive,

Alive, and therein mourned her self to Death. This manner of Death *Cleopatra* is said to have chose, shutting her self Alive up in her Tomb, having an *Aspis* with her in a Box.

Cerberus.

Cerberus *the Dog of Hell with Three Heads.*] *Cerberus* in Greek signifies a Flesh Eater. His Three Heads shew that Time which devoureth all Things hath Three Heads; one signifying Time present; another past; and the Third, to come.

Chimæra.

Chimæra *with the Head of a Lyon, a Goat and a Serpent.*] *Chimæra* is a Vulcano or Fire vomiting Mountain in *Lycia* or *Phaselide*, near to the top of which Lyons inhabit, about the midst Goats, and at the bottom Serpents.

Dædalus and Icarus.

Dædalus *and Icarus having Wings to fly.*] *Dædalus* being privy to the Adultry of *Pasiphae* was imprisoned, but stealing out at a Window from *Minos* King of *Crete*, and flying away with his Son *Icarus* in Two small Ships, one was split on a Rock by bearing too much Sail, whence it is said, *That flying too high, his Wings* (supposed to be glewed with Wax) *melted, and he fell and was drowned in the Sea*, but *Dædalus* got safe away. This *Dædalus* invented Sails for Ships. See *Inventions*.

Charon.

Charon *being Ferryman of Hell.*] *Charon* was Ferryman of *Egypt*, and wafted over in a Dung-boat the dead Bodies from *Memphis*.

Europa.

Europa's *Ravishment of a Bull.*] Was occasioned by *Europa's* being carried away in a Ship named *Taurus*, or the Pilot's Name being so.

Romulus.

Romulus *and Remus sucking a Wolf.*] Was, the Two Brothers had for their Nurse a Woman named *Lupa*.

Castor and Helena.

Castor *and Helena, hatch'd out of an Egg.*] Was, they were born and brought up in an Upper Room. Ambrosia

Ambrosia and Nectar, Meat and Drink of the Gods.] In the Greek the Words only signify Immortality. Ambrosia and Nectar.

Lynceus seeing One Hundred and Thirty Thousand Miles, thro' Stones, &c.] Lynceus: was the first discoverer of Mines under the Earth.

Styx, the River of Hell.] Styx is a venomous Fountain in Arcadia, Mortal to those that drink thereof; some deduce this Word Styx from another which signifies Sadness. Styx.

Io, transformed into a Cow.] Io proving with Child by a Phœnician Mariner, fled away in a Ship, which had a painted Cow upon it. Io.

Alecto, Megæra and Typhiphone, the Three Furies.] Alecto signifies want of Repose, Megæra, importeth Envy, and Typhiphone is a Greek Word composed of Two others, signifying Vengeance and violent Death. Alecto, Megæra, &c.

The Serpent Python slain by Apollo.] The Serpent Python is taken for the Ruins of Waters and Bogs, which cover the Earth, and seem to run over it; but Apollo, which is the Sun, becoming great, and dispersing the Vapours of the Regions of the Air by his Arrows or Beams, slew the Serpent. Some take it, that Apollo being the God of Wisdom, does by good prepared Medicines destroy all poisonous Diseases in the Body of Man, which is signified by the poisonous Serpent Python. Pytho.

Aurora, Daughter of Titan the Sun, and Goddess of the Morn'.] Aurora sometimes signifieth the East, and is to be understood that Place of the World where the Sun appeareth at his Rising upon our Horizon, and therefore is she by the Poets named also Daughter of the Earth, because she seemeth to Issue from the Earth. Aurora.

Castor

Castor and Pollux.

Castor *and* Pollux, *living and dying by Turns.*] The occasion of this Fable, is taken from the Two Stars, called *Gemini*, (into which it is feigned these Two Brothers were turned) the Nature of which is, that when the one riseth, the other goeth down. See in *MAGICK*.

Melissa, *turned into a Bee.*] *Melissa* was a Woman who first found out the making of Honey.

Of the many Deities, with their several Attributes. See *RELIGION*.

He who is desirous to read more of the like Fables, with the Explication thereof, let him peruse the Third Chapter of the Fifth Book of the Mythology of *Noel de Comites*, the Eighth Book of the History of the Pagan Gods of *Lilius Gyraldus*, *Catari* of the Images of the Gods, and *Rosse's Mistagogus Poeticus*.

To the Art of Poetry belongs also the Skill of making *Anagrams* and *Acrosticks*; and

Of Anagrams.

Anagrams are the disposing of the Letters of any Name into Words, tending to Praise (or Dispraise) as of *Carolus*, *O Clarus*. Sometimes 'tis the inventing Words, which being read invertedly, or backward, carry the same exact Sense as forward, as

Lewd did I live, Evil I did dwell.

Feeler I was no fo, Of on saw I Releef.

Also,

*Odo tenet mulum, madidam mappam tenet Anna,
Anna tenet mappam madidam, mulum tenet Odo.*

Subidura, Arudibus.

These are properly writ in all Capitals, the better to be read backward and forward. The disposing of Letters of a Name into *Anagram*, is best done by writing each Letter in Capital, and cutting them asunder, placing them together

ther in Words befitting your Invention and a good Sense.

Acrosticks are a sort of Poetry, the first Letter of every Line being read downwards, makes some particular Name, or brief Sentence. In the Name *Elizabeth*, an *s* instead of *z* is usually allowed for the Grace of Stile.

The Chief Poets

Have been, 1. *VIRGIL*, Prince of the *Latin* Poets, whose Name hath reared beyond Imitation, and who above all other only deserves the Name of a Poet, as his *Æneas* sufficiently Testifies; however, it escapes not uncensured by some. This Poem he left in the Custody of some Friends (at the Time of his Death) in order to be Burnt. But *Augustus Cæsar* committed it to the Custody and strict Care of *Lucius Varius* and *Plotius Tucca*, with Command that nothing should be altered. He was the Son of *Maro*, a mean Person, (some say a Potter) and *Maia*, (whose Dream of her bringing forth a Lawrel-Branch boaded very significantly) Born in the 177th Olympiad, in the Ides of *October*, at *Andes*, a Village not far from *Mantua*, whence he is stiled the *Mantuan-Swan*. His *Eclogues* and *Georgicks* are also in great Esteem.

The Chief of the
Latin and Greek
Poets.
Publius Virgilius
Maro,

2. *OVID*, his Contemporary and Second, tho' he confesseth he never saw *Virgil* but once in all his Life, and was a worthy Poet, as his *Metamorphosis*, *Epistles*, (which are his neatest Piece) *Fasti*, *Tristia*, *Amores*, &c. do Evidence. He was Banished by *Augustus* for his over Familiarity with *Julia*, Daughter to that Emperor, for whose sake 'tis believed he wrote his *Arte Amandi*.

Publius Ovidius
Naso.

3. *H O-*

Quintus Horatius
Flaccus.

3. *HORACE*, an Illustrious *Lyric* Poet of *Venusium* in *Apulia* (Son of a Salter, as some say.) He is held in highest Account of all the *Greek* and *Latin* Poets, for his *Lyrick Poesie*, and his *Odes*, *Epistles*, *Satyrs*, *Sermons*, and *Art Poetick*, will Justify for his Desert. He was also contemporary with *Virgil* and *Ovid*, and grew into such great Favour with *Augustus*, that from his Poverty, he at his Death, made *Augustus* Heir to what he had, which was contained in a Farm in the *Sabine* Territories, dying in the 56th Year of his Age.

Junius Juvenalis.

4. *JUVENAL* of *Aquinum*, a Town of the *Volsi*, flourished in the Time of the Emperor *Domitian*. A most Elegant *Latin* Satyrift, as appears by his Sixteen *Satyrs* extant.

Marcus Valerius
Martialis.

5. *MARTIAL*, a Native of *Bilbilis* (now *Bilboa*) in *Cantabria* (now *Biscay*) in *Spain*. He was by *Domitian*, with whom he was in great Honour, advanced to the *Tribunate* and *Equestrian Dignity*, and to whom he directed many of his *Epigrams*, Fourteen of which Books are happily preserved to us.

Titus Lucretius
Carus.

6. *LUCRETIVS* flourish'd about the 168th Olympiad, in the Time of the *Cymbrian* War; and for Majesty and Elegancy of Stile, to be ranked among the best of *Latin* Poets, whoever shall observe his Neat *Digressions*, for there he chiefly shews himself, his main Subject being a kind of System of *Epicurean* Philosophy in Heroick Verse, Entituled, *De Rerum Natura*.

Melesigenes, or
Homer.

7. *HOMER*, which Name he had from his Blindness, got by an Accident, but his true Name *Melesigenes*, as Born upon the Banks of the River *Melles*; his Mother's Name *Critheis*, his Father's more controverted. He flourished, as *Suidas* testifies, before the First Olympiad, Fifty

Fifty Seven Years, but as *Porphyrus*, One Hundred and Thirty Years. He is the most renowned of *Greek* Heroick Poets, and (as is most generally alledged) the ancientest of those, whose Works we have entirely Extant, as we have his Two Heroick Poems, *Ilias* and *Odyssey*, the first describing the *Trojan* War for the first Nine Years, the other the wandering Life of *Ulysses*, after the Taking of *Troy*; not to mention his *Hymns*, his *Batrachomyomachia*, and other small Poems, many of his Verses upon several Accidents and Occasions, are to be found in *Herodotus's* Life of this famous Poet.

8. *PERSIUS*, an Eminent Satyrift, who flourished under *Nero*; there are Six *Satyr*s of his Extant, which are commonly set forth in a Volume together, with *Juvenal* mentioned before.

*Aulus Persius
Flaccus.*

9. *EMPEDOCLES* of *Agrigentum*, a Writer of Natural Philosophy in Heroick Verse.

Empedocles.

10. *LUCAN*, by some, equalled with *Virgil*.

Lucan.

11. *SENECA*, who yields to no *Grecian* Poet whatsoever.

Seneca.

12. *CLAUDIAN*, Author of *Proserpina's* Rape, &c. for his Eminency in *Latin* Poetry, had his *Statue* erected by *Arcadius* and *Honorius*.

Claudius Claudianus.

13. *STATIUS*, a *Neapolitan*, flourished under *Domitian*; he wrote *Thebais*, *Achilles*, and *Sylva*: The first commented upon by *Placidus Lactantius*, and his last thought, by some, to be little short of *Virgil's* Verse, and to contain better Lines than in *Homer*.

Stattus Papinus.

14. *PROPERTIUS*, an Elegiack Poet of *Umbria*, of whose Poetry, what is Extant, is commonly published with the Poems of *Catullus* and *Tibullus*.

Sextus Aurelius Propertius.

Marcus Accius
Plautus.

15. **PLAUTUS**, that witty Comedian of *Sarsina* in *Umbria*, whom, in a great measure, we yet enjoy, viz. in Twenty Comedies.

Marcus Terentius
Varro.

16. **TERENCE**, an Elegant *Latin* Writer, known by his Books, *De re Rustica*, *De Lingua Latina*, *Satyræ Minippæ*; several other Works in Prose are lost, as well as some of his Verse, whereof some are seen in the *Parisian Collection*, Entituled, *Epigrammata & Poemata Vetera*, and *Brietiæ*, his *Acute Dicta*. He is highly extolled by *Cicero* in his *Tusculan Questions*. There were also *Publius Terentius*, *Terentius Maurus*, and other Poets.

Menander.

17. **MENANDER**, an *Athenian*, the Son of *Diopithes*, first Author of *Nova Comædia*, said to have written One Hundred and Eight *Fables*, and in Eight of them to be Victor. Very many of his Comedies are remembered by *Athenæus*, *Pollix*, *Pliny*, *Stobæus*, *Sidonius Apollinaris*, and others. He began to flourish about the 114th Olympiad.

French Poets.
Paulus Diaconus.

18. **PAULUS DIACONUS**, an *Aquileian*, taken by *Charles* the Great in the *Lombard War*. (He wrote of History. See *Historians*.) He composed several *Hymns*, some whereof are at this Day sung in the *Roman Church*, &c. And *Theodolphus*, an Abbot of *Floriacum*, and afterwards Bishop of *Orleans*, in the Time of *Ludovicus Pius*, composed a *Hymn*, which was used to be sung on *Palm Sunday*. There are many other renowned *French Poets*.

William of Salust.

19. **WILLIAM** of *Salust*, Lord *Du Bartas*, was a famous *French Poet*, as his *Divine Works* of the *Creation* testify. These Works were Translated into *English* by *Joshua Sylvester*, and Dedicated to King *James I.*

Famous

Famous English Poets

Are hardly to be Enumerated, especially to give an Account particularly of the Poems and Works of each, would require an Age, rather than an Hour to Recite, and whole Tomes rather than a Tract to contain. The Principal and most Noted of the Moderns, are,

1. *Buchanan*, whose Tragedies are lofty, and Epigrams not to be mended. English Poets.
Buchanan.
2. *Joseph of Exeter*, who lived under *Henry II.* and wrote the stately Poem of the *Trojan War*. Joseph of Exeter.
3. *Sir Thomas Moor*, under *Henry VIII.* who wittily play'd upon the Arch-Cuckold *Sabinus*, Scoffs at *Lalus* and *Harvey*, and wrote a Congratulatory Poem to King *Henry* upon his Coronation-Day; also a witty Epigram upon *Nicolaus*, an Ignorant Physician; and *Abingdon's* Epitaph; also those sweet Epistles to his Daughters, *Margaret*, *Elizabeth*, and *Cicely*. Sir Thomas Moor.
4. *William Lilly*, who lived in the same Time, and was Author of our Grammar, said by *Balæus*, to have written Epigrams, and other *Latin Poetry*. William Lilly.
5. *Sir Thomas Chancellor*, sent by Queen *Elizabeth*, Ambassador into *Spain*, where he at Leisure Hours compiled Ten Books in *Latin Verse*, *De Repub. Anglorum instauranda*. Sir Thomas Chancellor.
6. *Sir Jeffrey Chaucer*, who flourished in the Reigns of *Henry IV, V, and VI.* and was Poet Laureat. There are many of his Works lost, besides those Published, which also contain not *The Squire's Tale*, said to be Compleat lately in *Arundel House Library*. Sir Jeffrey Chaucer.

Sir John Gower.

7. Sir *John Gower*, little Inferior to *Chaucer*, to whom he was Contemporary, and Successor in the Lawrel. Some blame him for affecting the *French Phrase* and Words. His Chief Works were *Votum Meditantis*, *Confessio Amantis*, and *Vox Clamantis*; which last being Printed in the Reign of *Henry VIII.* is not yet wholly extinguished, the other Two are not to be seen any where, unless in some Eminent Libraries, where perhaps they may be found.

John Lydgate.

8. *John Lydgate*, an *Augustine* Monk of *St. Edmundsbury*, who writ that bitter Satyr of *Piers Plowmen*. He also wrote Odes, Eclogues, and other Satyrs and Poems.

John Harding.

9. *John Harding* wrote a Chronicle in *English Verse*, and lived in the Reign of *Edward IV.*

John Skelton.

10. *John Skelton*, a Poet Laureat in *Edward IV's* Days, tho' he has a miserable loose rambling Stile, and galloping Measure of Verse in his *Philip Sparrow*, *Speak Parrot*, *Death of King Edward IV.* *Treatise of the Scots*, *Ware the Hawk*, *The Tunning of Eleanor Rumpkin*; which Names are collected out of an old Printed Book.

Henry Howard,
Earl of Surry.

11. *Henry Earl of Surry*, who flourished in the Time of *Henry VIII.* famed for Martial Exploits, Learning, Wit, and Poetick Fancy; as also was *Henry Lord Morley*, who was Author of some Dramaticks.

Sir Thomas Wyat.

12. Sir *Thomas Wyat*, of *Allington Castle* in *Kent*, Translated *David's Psalms* into *English Metre*.

Thomas Stern-
hold.

13. *Thomas Sternhold*, an Associate with *John Hopkins*, in one of the worst of many Translations of *David's Psalms*, yet being first made Choice of, are used in all Parochial Churches.

Churches. They flourished in Queen Mary's, and the beginning of Queen Elizabeth's Reign.

14. John Haywood, famous for his Merry Epigrams. John Haywood.

15. Doctor Phaer, who, in Parts, Translated Virgil's *Aeneas*, (after finished by Arthur Golding) and lived about Queen Mary's Time. Doctor Phaer.

And Infinite others, as Abraham Cowley, Abraham Trance, Alexander Brome, Anthony Brewer, Sir Aston Cockain, Bartholomew Traherne, Barton Holyday, Benjamin Johnson, Christopher Marlow, Christopher Ocland, Edmund Fairfax, Edmund Prestwich, Edmund Spencer, Edmund Waller, Sir Edward Dyer, Francis Beaumont, Francis Quarles, Sir Foulk Grevil, Lord Brook; Jasper Mayne, George Bullen, Lord Rochford; George Chapman, Fletcher, Etberidge, Gascoign, Herbert, Peel, Ripley, Sands, Withers, Henry Glapthorne, King, Vaughan, Humphrey Mills, James Shirley, Stuart, John Baleus, Sir John Davis, Sir John Denham, John Downe, Dryden, Fletcher, Ford, Hall, Harvise, Hoddesdon, Lane, Leland, Lilly, Marston, Milton, Ogilby, Philips, Suckling, Webster, Wilson, Lucas Shepherd, Martin Llewillin, Michael Drayton, Nicholas Kenten, Philip Massinger, Sir Philip Sidney, Phineas Fletcher, Sir Ralph Freeman, Richard Braithwait, Richard Brome, Richard Corbet, Richard Crashaw, Sir Richard Fanshaw, Richard Rablet, Turner, Lovelace, Robert Baron, Chamberlain of Gloucester; Gomersal, Green, Heath, Herrick, Sir Robert Howard, Dr. Robert Wild, Robert Mead, Samuel Daniel, Rowley, Woodford, Shakerly, Marmion, Thomas Campion, Carew, Churchyard, Collins, Deckar, Sir Thomas Eliot, Thomas Flatman, Goff, Hobbs, Kid, Linacer, Lodge, Manly, May, Middleton, Nash, Nabbes, Newton, Preston, Randol, Rawling, Read,

Read, Shadwel, Sprat, Stanley, Storer, Watson, William Alabaster, Brown, Bosworth, Cartwright, Cavendish, late Duke of Newcastle; Sir William Davenant, Gray, Habington, Hammond, Hemmings, Rowley, Sampson, Shakespear, Smith, Wager, Warner, and the Unimitable Butler in his Hudibras

Poets now Living.

The most Eminent Poets now Living, are Mr. Tate, Poet Laureat; Mr. Milbourne, Mr. William Congreve, Mr. Rowe, Mr. Thomas Southerne, Mr. Crowne, Mr. Elkanah Settle, Mr. Thomas Durfey, Mr. Charles Hopkins, Mr. William Ravenscroft, Mr. Granville, Mr. Motteux, Mr. Dennis, Mr. Vanbrook, Mr. Farquar, Mr. Baker, Dr. Garth, Mr. Cibber, Mr. Pittis, Mr. Ward, Capt. Bishe, and the unknown Author of *Faction and Moderation Displayed*.

Famous English Poetesses.

English Poetesses.

1. *Helena Flavia*, Daughter of *Coilus*, King of Britain, and Mother to *Constantine* the Emperor. *Balaus* mentions, among other of her Works, her Book of *Greek Verses*.

Anne Askew.

2. *Anne Askew*, Daughter of *William Askew*, of *Lincolnshire*, lived in *Queen Mary's* Reign.

Anne Broadstreet.

3. *Anne Broadstreet*, a *New-England* Poetess; some of her Works were Printed in this Land, Anno 1650. Her Poems were Descriptions of the *Four Elements*, *Four Humours*, *Four Ages*, *Four Seasons*, and *Four Monarchies*. They are not yet quite Extinct.

Arabella.

4. *Arabella*, Kinswoman to King *James I.*

Behn.

5. *Astrea*, or *Aphara Behn*, a Dramatick Writer, yet in Memory.

Bacon.

6. *Lady Bacon*, One of the Four Daughters of *Sir Anthony Cook*.

Katherine Philips.

7. *Mrs. Katherine Philips*.

8. *Lady*

8. Lady Elizabeth Carew.

Carew.

9. Mrs. Elizabeth Weston, in some Esteem Elizabeth Weston, with Farnaby.

10. Lady Jane Gray, Daughter to the Duke of Suffolk, once proclaimed Queen of England. See Edward VI. in our Chronology of England. Lady Jane Grey.

11. Margaret, Dutchess of Newcastle, who hath left Three Volumes in Print; One of Orations, One of Philosophical Discourses and Notions, and One of Dramatick and other kinds of Poetry. Margaret, Dutchess of Newcastle.

12. Mary, Countess of Pembroke, Sister to the Incomparable Sir Philip Sidney, whose *Arcadia* was consecrated to her Virtuous Inclinations to Poetry. Countess of Pembroke.

13. Lady Mary Wroth's *Urania*.

Lady Mary Wroth.

14. Mildreda Cook, and Lady Russel, both Daughters of Sir Anthony Cook. Mildreda Cook, and Lady Russel.

Several Books relating to the Art of Poetry.

Scaliger de Arte Poetica, Blount's Remarks on Poetry, Lord Roscommon's Art of Poetry, Dryden's Essay on Dramatick Poefie, Rhymers of Tragedy, Poetical Recreations, *Gradus ad Parnassum*, *Historia Poetica*, *Thesaurus Poeticus*, d'Assigny's Poetical Histories, Aristotle's Art of Poetry, Horace's Art of Poetry. Bishe's Art of Poetry.

Of LOGICK.

LOGICK is the Art of Disputing well, and was always in so great Esteem among the Ancients, that some of them admired it as a Thing inspired from Heaven, and looked upon them as raised above the Condition of Men, who understood the Rules of it. The Philosophers of old have bestowed several Names upon it, and measuring the Dignity of it by its Necessity, have called it the *Medicine* of the Soul, the *Organ* or *Instrument* of Sciences, and the *Eye* of the Mind, and is certainly very necessary for the attaining of all Sciences.

Logick, how different from Sophistry.

Logick is natural to all Mankind, because 'tis nothing else but the use of our Reasoning Faculty. Artificial *Logick* is made up of some Rules and Precepts that help our Reasoning Faculty; and it differs from *Sophistry*, in that *Sophistry* is ever occupied either in proving or endeavouring to prove the Truth always to be false, or else that which is false to be true, by using some Ambiguous Word, or by not well applying it to the Purpose. The difference between *Logick* and *Rhetorick* is not much, for *Logick* doth plainly and nakedly set forth by Rules and Apt Words, the Sum of the Thing in Argument, while *Rhetorick* useth gay painted Sentences, and setteth forth the Matter in good Ornaments and large Eloquence; wherefore *Zeno* being once asked the difference between *Logick* and *Rhetorick*, made Answer by Demonstration with his Hand, declaring that when his Hand was closed it resembled *Logick*, when it was open and stretched out, it was like *Rhetorick*.

How different from Rhetorick.

Zeno's Demonstration.

Besides

Besides the Division of *Logick* into Natural and Artificial, there is another common Division of it into Doctrinal and Practical. Doctrinal is that which delivers the several Rules directing us in Perceiving, Judging and Reasoning. Practical is that which applies those Rules to Use and Practice; for which reason the Ancients called the former *Abstracted* or *Separate* from Things, but this latter *Concrete* or *Joynd* to the Things themselves we are discoursing of.

Division of Logick.

Concerning the clear and distinct Perceptions of Things, for the attaining of Truth, the following Points are heedfully to be minded.

First, What *Cogitation* it self, or *Perception* is, and what the Modes be of it. Now by *Cogitation* is understood all those Things which we experience in our selves, and whereof we are conscious, which Description comprehends all the Operations of our Understanding, Will, Imagination, and Sense; for to Understand, to Will, and to Imagine, is nothing else but to represent to our selves the Thing whereof we have an Idea. There are Three Species of *Cogitation*, Pure Intellection, Imagination, and Sense; for by these Three Modes or Ways, the Mind of Man Perceives or Thinks.

Secondly, What be the Objects of our *Perceptions*, whether Universal or Singular.

Thirdly, How our Mind may arrive to the Knowledge or *Perception* of Things, with respect had to the Things that are to be known; such as are the common Attributes, Causes, Effects, Subjects, Adjuncts, &c.

Fourthly,

Fourthly, Whence the Clearness and Distinction of Ideas do depend, as likewise the Agreement and Disagreement of Things.

Logick teacheth the Art of making a *Syllogism*, which consisteth of Three Propositions, whereof the Two First being granted, the Conclusion must necessarily be granted, because it was already implicitly admitted by him, who admitted of the Premisses. As 'tis evident in the *Syllogism*, *Every Man is a Living Creature; Peter is a Man, Ergo, Peter is a Living Creature.*

Its Two Chief Principles are these, *Dictum de omni*, and *Dictum de nullo*; the first signifieth that whatever is generally affirmed of any Thing, may likewise be affirmed of whatever is contained under that Thing, as if I say, *Every Animal is a Living Creature*; then it follows, that a *Bird is a Living Creature*. The second signifieth, that whatever is generally denied of any Thing, is denied likewise of whatever is contained under that Thing; as if I say, *No Animal is a Stone*; then I may, and ought likewise to say, *No Bird is a Stone*, &c. But now 'tis Time we come to

The Predicables.

Genus.

The Five *Predicables* or *Universals*, otherwise called the *Five Common Words*, I. *Genus*, the general Word which speaks of many that yet differ in Kind, as *Animal*, a Living Creature; *Gemma*, a Precious Stone; and this general Word is two ways considered, the chief general in *Latin*, *Genus Summum*, and the middle general in *Latin*, *Genus intermedium*.

Species.

II. *Species*, the Kind or Special, which is Two-fold, the lowest or most special, and the middlemost or intervening; the lowest is that which is immediately predicated of Individuals,

duals, as Man, of *Charles* and *James*; the middlemost, tho' with respect to the *Genus* under which it stands to be called Species, yet with respect to the Inferiours of which it is predicated, it is a *Genus*; so *Animal*, which is the Species of Living Things, is the *Genus* in respect of Man or Beast. III. *Predicable* is *Dif-*

Differentia,

ferentia, the Difference, which is the same that is spoken of many which differ in Form and Kind, when the Question is asked what manner of Thing it is; as when we say, *Quale quid est Homo?* What manner of Thing is Man? We answer, *He is endued with Reason.* If the Question be asked, What Man is? We answer by his *Genus*, *He is a Living Creature.*

IV. *Proprium*, the Property is taken in a Fourfold Sense; First, The Property is that which agreeth to some Kind only, altho' not to every Person comprehended under the same Kind; as it is proper to a Man only to be a Physician, or a Poet, and yet not proper to every Man. Secondly, That which agreeth to every singular Person, and yet not to a Man only. Thirdly, That which agreeth to every Man, and to Man only, and yet not always. As Hoary Hairs in old Men agreeth to Man only, and yet not always, but for the most part Men have Hoary Hairs in their old Age. And Fourthly, That which indeed is most aptly and chiefly called *Proprium*, when any Thing doth agree to every Man, to Man only, and always to Man. As to be able to Speak, Laugh, go Upright, agreeth to every Man, Man only, and always to Man; yet if any object, some Men go Crooked, are Dumb, &c. this Rule sheweth to avoid such Objections, *Verba in definitionibus posita, non Actum, sed potentiam significant*; which is as much as to say,

Proprium.

A Rule to avoid Objections in Logick.

Accidens.

say, That Words used in Definitions, do not signify the very Act in Deed, but the Power, the Aptness, or the Inclination of Nature thereunto. V. *Accidens*, the Thing chancing or cleaving to the Substance, and all that is called Accident, which is not Substance, neither doth necessarily agree, but doth only contingently follow the same; as Roundness, Hardness, &c. are common Accidents, with respect to a Body, as Sorrow and Fear are Accidents, with respect to the Soul or Mind. An Accident is Two-fold, separable, which may be easily separated from the Subject in which it is conceived to be, as Sleep from Man; and inseparable, which cannot be separated, as Blackness from a Negro.

The Order of the highest *Genus*, and those that are Subaltern, as also of the *Species*, that they may be the better known, take this Series of Universals, by which we may be able to descend from the highest *Genus*, to wit, *Substance* to *Individuals*, and remount back again from the *Individuals* to the highest *Genus*.

	A Substance,	
<i>Corporeal,</i>		<i>Intellectual.</i>
	A Body,	
<i>Living,</i>		<i>Void of Life,</i>
	A Living Thing,	
<i>Sensitive,</i>		<i>Void of Sense.</i>
An Animal, or Sensitive Creature,		
<i>Endued with Mind,</i>		<i>Void of Mind,</i>
	A Man,	
<i>This, Another,</i>		<i>Plato.</i>
		<i>The</i>

The Words which follow from Substance to Man, are called intervening Genus's; and those on the Right and Left, are the Differences which are said to be in an indirect Line. From those Words which are disposed in a direct Line, they make the Series in a twofold manner, either by *Analysis* or Division descending, beginning from the highest Genus, which is Substance, and distributing it, and all other Genus's that resort under it, into their Species, by their difference, till we come to the Individuals. The other is by Way of Synthesis ascending, beginning from the Individuals, and from them mounting to the Subaltern Genus, and lastly to the highest Genus, viz. Substance.

Logicians reckon up Ten *Predicaments*; a The Predicaments, Predicament being an Order of single Words, wherein Things of one Kind are comprehended under one Word which is most general; these they call most general Genus's. And each Predicament is divided into Substance being a Substance indeed, and Accident as not being of the Substance but declaring thereunto. The Predicaments are,

1. *Substantia*, the Substance divided into First and Second Substance.

Substantia.

2. *Quantitas*, the Quantity, which is the greatness of a Thing, or the Number.

Quantitas.

3. *Qualitas*, the Quality, is a Form or Shape of the Body, and is of Three Sorts, the Habit in a Thing, the forwardness in any Thing, and the full attaining of any Thing.

Qualitas.

4. *Relativa*, the Relative hath a mutual Respect with another Thing.

Relativa.

5. *Actio*, is the manner of doing any Thing, and is either Natural or Voluntary.

Actio.

6. *Passio* or *Perpeffio*, the suffering a Thing to be done.

Passio.

7. *Quando*

Quando.

7. *Quando*, when, containeth the Difference and Diversity of Times, a Thing was done.

Ubi.

8. *Ubi*, where, is a Predicament which comprehendeth the Description of Place.

Situs.

9. *Situs*, is when a Man's Body is any wise placed, as to lie aside, stand, &c.

Habitus.

10. *Habitus*, called by some *Habitus Integumentum*, that is a Covering or Apparelling any One, as to have a Coat, &c.

The Use of the
Predicaments.

The Use and Commodity of these Predicaments, is to define any Word and know the proper Nature of the same. As for Example, if you will know what Man is, you must have recourse to *Substantia*, and there you shall learn by the same Place, that Man is a living Creature endued with Reason. If you will know what Virtue is, you must go to the Predicament *Qualitas*, and there will see that Virtue is a constant Habit of the Mind. If you will define the Nature of a Father seek for *Relativa*, and thereby you shall learn that he is a Father that hath a Son. He a Master that hath a Servant, &c. Wherefore these Predicaments are the Store-house for those who will define any Word, or give a natural Name unto it, where they may find Matter at Pleasure for their Use and Service.

In *Logick* it is necessary for every Man to learn diligently the Definition and Devision of every Matter that by Reason may be comprehended; and Definition is Two Ways considered, either of a Word or of a Substance. Of a Word in any manner of Declaration of a Word, as a Realm is so called because it is ruled by a King, &c. A Substance is defined by Shewing the very Nature of the Thing, and every perfect Definition is made perfect by the

the general Word and his Difference joined together.

A Proposition or *Enunciation*, according to *Aristotle*, is an Oration or Speech, which affirms or denies, or an Oration that signifies either true or false. Proposition is either Affirmative or Negative: That is an Affirmative Proposition in which the Subject and Attribute are joined or do agree; and Negative in which they are disjoined or disagree; and the Use of a Proposition is when Men by occasion of Discourse fall at Variance and cannot agree upon their Matter, being both earnest to know the Truth, they bring the Matter to a Point, debate that, and then go on to another. This the *Logicians* call a *Proposition*, and the *Rhetoricians*, *Stating of the Case*. There are Particular and Singular, as well as Universal Propositions.

Enunciation.

These Propositions called General or Universal, are known by these Signs, *Omnis*, *Nullus*, *Quilibet*, *Nemo*. Every covetous Man is Poor; no Man can Love and be Wise at once, &c.

General Propositions.

Particular Propositions are known by these Signs, *Quidam*, *Aliquis*, *Plerique*, *Plerunque*. Some Men are too much desirous of Glory. A certain Man; some Body.

Particular Propositions.

Indefinite Propositions. The Soul is immortal; young Men are Riotous, &c.

Indefinite Propositions.

A singular Proposition is when a proper Name of a Man is contained therein: As *Cicero* is an Orator; *Alexander* is a Warrior.

Singular Propositions.

General contrary Propositions are those whereof one doth generally affirm, the other doth generally deny. All Men are, &c. No Men are, &c.

General contrary Propositions.

Particular

Particular contrary
Propositions.

Particular Contraries are, some Men are, &c. some Men are not, &c.

Contradictory Pro-
positions.

Contradictory Propositions are, when one is Universal Affirmative; the other particular Negative, or Universal Negative and Particular Affirmative.

Subaltern Propo-
sitions.

Subaltern are those which be either Universal Affirmative and Particular Affirmative, or Universal Negative, and Particular Negative.

Categorical Propositions may be said to be opposite Four Ways; Contrarily, Subcontrarily, Subalternately and Contradictorily.

TABLE of Repugnant Propositions.

All Men are mov'd with
Glory.

No Man is mov'd with
Glory.

Contrariety.

General and
Particular
Affirmative.

Contradictory.

General and
Particular
Negative.

Subcontrariety.

Some Men are mov'd with
Glory.

Some Men are not mov'd
with Glory.

Four kinds of Ar-
gument,

There are Four kinds of Argument. 1. A Perfect Argument. 2. An Imperfect Argument. 3. An Induction: And 4. An Example. If there be just Three Propositions in the Argumentation, the first is called the Major, the Second the Minor, and the Third is called the Conclusion,

Conclusion, in which the Minor and Major Terms are disposed. Argumentation in general is divided into Perfect and Imperfect. Perfect Argumentation is a Syllogism, which for as much as it consists of Three Propositions duly disposed, is of a perfect Form and most proper to persuade. An Imperfect Argumentation is either an *Enthymeme*, an *Induction*, an *Example*, a *Dilemma* or *Sorites*.

Of Syllogisms, Some are Simple, others Con-
junct, and there are reckoned Twenty One
Modes of Syllogisms which may be reduced to
Fourteen: The Modes of the First Figure are
Barbara, *Celarent*, *Darii*, *Ferio*. Of the Second
Cesare, *Camestres*, *Festino*, *Baroco*. Of the Third,
Darapti, *Felapton*, *Disamis*, *Datifi*, *Bocardo*,
Ferison.

Syllogisms

Example of the First Figure.

Barbara. Every Body is extended.
Every Stone is a Body.
Therefore every Stone is extended.

Example of the Second Figure.

Cesare. No Stone is a Plant.
Every Oak is a Plant.
Therefore no Oak is a Stone.

Example of the Third Figure.

Datifi. Every One that serves God is a King.
Some One that serves God is Poor.
Therefore some One that is Poor is a King.

An *Enthymeme* seems to have taken its Name
from this, that it expresseth only one Propo-
sition,

Enthymeme

fition, and suppresseth the other as being too clear and obvious, and which is easily understood by those we discourse with. This way of arguing is very common among Men, who in their usual Reasoning commonly suppress the Proposition, as supposing that they to whom they speak will easily supply it. As when we say,

*I was able to Save thee,
And therefore able to Ruin thee.*

Induction.

Induction is an Argumentation which from many Singulars concludes an Universal. As,

*This Man is a Living Creature.
That Man is a Living Creature;
Therefore every Man is a Living Creature.*

Example.

Example is a kind of Argumentation imperfect, whereby from one Singular we gather another, because of a likeness of Reason that is between them. As,

*Cataline was punished for making of Sedition,
Therefore this seditious Fellow should be punish'd.*

Sorites.

Sorites is an Argumentation consisting of Propositions so disposed, that the Prædicate of the foregoing Proposition becomes the Subject of the following; whence the last Prædicate is in Conclusion attributed to the first Subject; as in this Example:

*Covetous Persons desire many Things.
They who desire many Things want many Things.*

They

They who want many Things are Miserable; therefore Covetous men are Miserable.

A *Dilemma* is an Horned Argument, and is when the Reason consisteth of repugnant Members, so that whatsoever you grant you fall into the Snare: As,

Dilemma.

*Tribute must be given to Cæsar or to God:
If to God, then not to Cæsar, and this is Treason:
If to Cæsar, then not to God, and this is Sacrilege.*

Demonstration is a Syllogism consisting of Premises that are True, Immediate, Prior, more known, and Causes of the Conclusion, and is Twofold, the one *à Priori*, and the other *à Posteriori*.

Demonstration.

A *Topical Syllogism*, which is also called *Suasory* or *Opinable*, is that which concludes from Probables, and 'tis commonly said that a Topical Syllogism doth persuade indeed, but doth not force one to Assent as a Demonstration doth.

A Topical Syllogism.

A *Sophistical* or *Paralogistical Syllogism*, which with one Word is called a *Sophism*, is a Syllogism consisting of false Propositions, which yet have an Appearance of Truth, or is a Syllogism that begets Error; as for Example:

A Sophistical Syllogism.

All Lines drawn from one Point to another are equal.

*But a Right and a crooked Line may be drawn from the same Point to the same Point;
Therefore a right and crooked Line are equal.*

As for the cavilling Part, which consists in Words that are called *Fallacia Dictionis* or Fallacy in Words, which frequently consist in the Homonymy of the Words, when Things alto-

Fallacia Dictionis.

Amphibology.
See Edward II.
in Chronology and
Oracles in Ma-
gick.

gether indifferent are signified with the same Word. Sometimes also in the ambiguous context of the Speech, and then it is called *Amphibology*. There are Eight Differences or Ways of Cavilling, which may be found in the Logicians Books. The safest Way to avoid any of which capacious Sophisms, is to define the Words themselves in case of a Fallacy from Equivocation or Homonymy, which Homonymy is the doubtfulness of a Word when it hath divers Significations.

Method.

Concerning *Method*, or the orderly Disposition of our Thoughts; for as much as *Logick* was found out for the attaining of Sciences, and that our Thoughts can hardly be rightly formed without its Assistance. Method seems to be necessary to assist and accomplish our Mind in the Knowledge of Things, and is distinguished as follows.

Analytical Method.

Analytical Method, or the Method of Resolution, shews the true Way by which the Thing was Methodically and Primarily invented.

Synthetical Method.

Synthetical, or the Method of Composition clearly demonstrates what hath been concluded but by an opposite Way, and fetch à *Posteriori*.

Composing.

The Method of Composing is so called, because it makes use of General and Common Things, to come to Things Particular and Compound.

Genetical Method.

Genetical Method teacheth us to frame a Discourse upon any Theme, and takes its Name from *Genesis*, because it is, as it were, a new Generation of a Thing, and is that whereby we elaborate a Theme that hath not as yet been explained or demonstrated. And forasmuch as the Theme or Matter proposed to be known is either One and Simple, or Conjunct and Complex; as when for Example I consider God,

or

or the Power of God in Creating the World, I consider something that is Simple or Incomplex. But when I set before me this Sentence, *God Created the World* (or any other Proposition whereby any Thing is affirmed or denied of another) I think of something that is Con-junct or Complex.

The handling of a *Simple Theme* consists in the seeking of Arguments that may declare a *Simple Theme*, and the disposing of them in due Order. I. To examine the Word of the Theme, whether it be derived, and if so to give its Ety-mology. 2. Whether it be Ambiguous, and then its various Significations are to be Enumerated and Expounded. 3. Whether it be Abstract or Concrete. II. In the Second Place we must enquire into the Genus which may be seen in the Table before, representing all the Genera and Species. III. We must enquire into the Causes. IV. The Effects are to be considered, not every one, but such as are Memorable and worth the mentioning. V. The Adjuncts are to be handled according as the Theme is, whether Universal or Proper; as also, the Antecedents and Consequents. VI. Definition. VII. Division, whereby the Subject is divided into its Integral Parts if the Theme be an Integral Whole, or into Species, if it be a Genus. VIII. Comparates or Things that agree in Quantity or Quality. Lastly, Opposites are sub-joined to all these, and are of considerable Use according to that common Saying—*Contraries set together illustrate each other.*

A *Complex Theme* or Proposition, is genetical-ly demonstrated from the Subject and Prædicate, which as two Integral Parts, do constitute the same; because by them it is judged whether a Proposition be True or False, Uni-versal

versal or Particular, Necessary or Contingent, Affirmative or Negative.

Conjunctio Distrabendorum.

Conjunctio Distrabendorum, is a joining Things together which should be separate.

Disjunctio Coniunctorum.

Disjunctio Coniunctorum, is a dividing of Things which should be joined.

Forma Orationis.

Figura Dictionis, or *Forma Orationis*, is when the Phrase breedeth Error, and the Property of it not well known causeth Ambiguity.

Fallacia Accidentis.

Fallacia Accidentis, is when one and the same Thing, is referred both to Substance and Accident.

*That same which Flesh is, Fish is not.
Flesh is Food.*

Therefore Fish is none.

Secundum non causam ut causam.

Secundum non causam ut causam, is when a Cause not able to prove the Matter, is brought in, as tho' it were of force, but the Ground considered the Fault is seen.

*Drunkenness is Evil,
Ergo, Wine is naught.*

Fallacia Consequentis.

Fallacia consequentis, when the Consequent, *i. e.* the latter Proposition is evil gathered by the Antecedent.

*Evil Deeds purchase Death,
Ergo, goods Deeds purchase Life.*

Plures Interrogationes.

Plures Interrogationes, is when any one goes to deceive another by asking him this and that, and is at length by granting those Things asked brought to an Inconvenience.

Repetitio Principii.

Repetitio Principii, repeating of that wholly in the Conclusion which was before spoken in the first Proposition.

Ignoratio

Ignorantio eleichi, is the mistaking of contradictory Propositions, as,

To eat Flesh is good for Health's sake.
To eat Flesh is not good when Offence may follow:
Ergo, to eat Flesh is good, and not good.

To avoid false Arguments, we must observe diligently the framing of the Matter, and see to put the self same Thing into another manner, by making a clear contrary Example: As,
 Such a One is an honest Man, for I saw him him once give Alms.

Answer. Such a One is no Drunkard, for I saw him once Sober.

By which, and the like true Distinctions and Objections, you may discover the Fraud or Instability of an Argument, also Faults in Definition, and the like.

Crocodilites, is a Subtilty used so, that being asked before what we will say, the same is turned to our Prejudice; as Logicians feign

A Crocodile took a Woman's Child, and ask'd her (after this manner) a Question: *I will give thee thy Child if thou wilt say Truth, and tell me whether I will give thee it again or no?* She answered, *I know thou wilt not give me my Child again, therefore it reason is I have it, because I have said Truth.* Nay, says the Crocodile, *I will not give it thee again, because thou may'st be seen to have said Truth, lest giving it thee again had made thee lye: Neither would I have given thee thy Child again if thou had'st said otherwise, because then thou had'st not said Truth.* See Dilemma before.

Crocodilites.

Antistrephon, is to turn a Man's Saying upon him again; in Latin call'd *Inversio*.

Antistrephon.

Ceratina Argumentationes.

Ceratina Argumentationes, are Horned Arguments.

Cacosistata.

Cacosistata, are Arguments proposed between Two Persons, that serve as well for the one as for the other. As, You must forgive him because he is an Infant——No, therefore will I beat him to make him better hereafter.

Asistata.

Asistata are Arguments impossible to be true: As to say, He holds his Peace, and yet he is Talking. Or to accuse an Infant of Adultery.

Utis.

Utis, is when one goeth to prove a Thing, and his Proof is uncertain as the Thing he would prove: As, A Thunderbolt is as swift as the Motion of the Sun. Now most think the Sun fixed in the Firmament, according to the Copernican System; so that the Proof is uncertain to prove his Argument.

Pseudomenos.

Pseudomenos is a Lying Argument, for whatsoever is said is yet amiss. As, *Epimenides* who was born in *Crete*, said all Men of *Crete* were Lyers. If he ly'd then they were not Lyers; if he did not Lye (as to them) yet saying (all) included himself, and therefore he made himself a Lyer in speaking Truth.

Georgius Leontinus was the first durst undertake to discourse in a publick Assembly on any Subject should be offered to him. See in INVENTIONS.

AUTHORS,

Aristotle, *Arriaga*, *Ruvius*, *Guilminot*, *Stierii Logica*, *Crackanthorp Logica*, *Burgersdicius's Logick*, *Spencer's Logick*, *La Logique ou l'Art de penser*, French, *Wilson's Art of Reason*, *Des Cartes Philosophy*.

Of RHETORICK.

RHETORICK is the Art of Oratory or Eloquence, an Art by which *Cicero* used to sway the Senate of *Rome* just as he would himself, and was therefore called King. Its chief Parts are Five, Invention, Disposition, Elocution, Memory and Pronunciation.

By Oratory *Cato* provok'd *Cesar*,
Cicero, *Anthony*,
Demosthenes *Philip*
to the Ruin of
their Countries.

In *Invention* we must consider what we are to invent, by what Arguments to confirm the Matter, and from what Topicks or general Heads these Arguments must arise; which last is considered in its Definition, Division, Notation, Conjugation, Genus, Species, Similitude, Dissimilitude, Contraries, Opposites, Comparison, Causes, Effects, Adjuncts, Antecedents, Consequents. Now of the

1. *Definition* is a Speech explaining or declaring what a Thing is: The Parts whereof, according to Logicians, are Two; 1. The *Genus*, or general Name agreeing with the Thing defined, &c. 2. The Difference or particular Name, which doth only agree with that which is Defined.

2. *Division* is the distribution of the Matter propounded into Parts.

3. *Notation* or Etymologie, is the Interpretation and Derivation of the Thing.

4. *Conjugation* is distinguishing Singular and Plural, &c.

5. A *Genus*, comprehends several Things under it, which are really different from one another.

6. A *Species*, is that which may, with other Things, be referred to one common *Genus*. See *Genus* and *Species* in LOGICK.

7. *Similitude*

Similitude,

7. *Similitude* is the comparison of Things together, which yet differ a little in some Respects, but not in some particular.

Dissimilitude.

8. *Dissimilitude* is the disagreeing of Two or more Things.

Contraries.

9. *Contraries*, are Things which cannot both at the same Time agree with one Thing.

Opposites.

10. *Opposites* are the direct Contraries.

Comparison.

11. *Comparison*, is in comparing one Thing with another, and is equal or unequal.

Causes.

12. *Causes*, are Things by which a Thing is in any sort produced, and these are Efficient which maketh the Thing, Material, of which a Thing is made; Formal, by which the Thing is what it is; and Final, that for which a Thing is made.

Effects.

13. *Effects* are such Things are propounded by their Causes.

Quis?

Quid?

Ubi? Quibus.

Auxiliis?

Cur? Quomodo?

Quando?

14. *Adjuncts* are such Things, are joined to the Thing or Person, by *Who?* Signifying the Quality of the Person, &c. *What?* Importing an Inquiry after the Nature of the Thing. *Where?* Denoting the Place. *With what Aid?* Noting Enquiry of who joined in the Action. *Why?* With what Intent. *How?* The manner of doing it. *When?* The Time in which it was done.

15. *Antecedents*, are such Things which go before the Thing or Matter.

15. *Consequents*, are such Things which necessarily follow after the Thing, &c.

Every Theme or Proposition consists of Three Parts, 1. The Subject of which we speak. 2. The Prædicate, that which is spoken of the Subject. 3. The Cupola, some Verb which joins the Subject with the Prædicate.

Disposition.

Disposition, is the orderly placing of those Things which are invented, and is either Natural

tural according to Nature, or Artificial for Delight or Profit. Now all Discourses are either of Persons, Things or Facts; in Persons are considerable, their Descent, Nation, Sex, Age, Fortune, Manners, Education, Relations, &c. In Things, that is Substances and Qualities, the *An sit*, *Quid sit*, *Quale*, *Quotuplex*, &c. its Genus, Species, Properties, &c. In Facts, the Cause, Place, Instrument, &c. The natural Parts of a Discourse are, 1. An *Exordium* or Preface. 2. Declaring and proving the Positions. 3. Refuting the contrary. 4. A short Recapitulation; and 5. Conclusion called *Peroration*. And in this *Peroration* the Orator should very much endeavour to set an Edge in the Mind of his Auditors and be of his Side; for a good Orator should not only pierce the Ear and allure the Eye, but also invade the Mind of his Hearer, the better to effect which, *Enumeration* is required, that the Arguments more largely opened in the former Discourse, may be clearly repeated under a new Form of Words. And *Amplification* for enlarging with Adornments of Figure, the Repetition so made.

Exordium.

Peroration.

Enumeration.

Amplification.

Elocution.

Elocution is an Elegant Order of Words and Sentences used in the Utterance, and is performed by the fine manner of Words, called a *Trope*, or by the fine Frame of Speech called a *Figure*. In a *Trope* is to be considered, 1. The Affections, and 2. The Kinds. The Affections of a *Trope* are Four, 1. *Catachresis*, when a Word is abusively put for another, as, *He Threatens me a good Turn*. 2. *Hyperbole* expressing a Thing in the superlative or highest Degree, *That in Descending we may find the Truth*. 3. *Metalepsis*, that containeth many *Tropes* in one Expression, as when we by an improper Speech signifie first that which is improper,

Trope.

Catachresis.

Hyperbole.

Metalepsis.

Allegory.

improper, and by that improper Speech another, and so forward. 4. An *Allegory*, which is a long prosecuted Metaphor, in the Use whereof observe to end with the same kind of *Trope* with which you began.

Metonymie.

The kinds of a *Trope* are, 1. A *Metonymie*, which is a Transnomination or using one Name for another; or *Horace* for the Works composed by *Horace*. These *Metonomies* may be of the Four *Causes* before. 2. An *Irony*, which

Irony.

is a Thing spoke fleeing, or by the contrary of what we mean; as, O thou hast got thy Purpose? When indeed he had not. *Paralepsis* is a kind of Irony, when we say we let pass that which notwithstanding we touch as full.

Paralepsis.

Apophasis.

Apophasis is another kind of Irony, by which we deny to say or do what yet we speak very earnestly. 3. A *Metaphor* (used chiefly in Descriptions) are Similitudes of Words, whereby we endeavour to paint a Thing in Words illustrating, or express our selves by a Word which is of the like Signification with what we mean.

Metaphor.

Synecdoche.

4. *Synecdoche* by which a Part is put for the Whole, or the Whole for a Part.

Figure.

A *Figure* is a kind of Elocution, by which the Form of a Speech is changed from its Right and plain Use, and is either of a Word or a Sentence: Of a Word, is that by which an Oration or Speech is composed of Words apt and suitable to one another. Of a Sentence is by the sweet Number of Sounds therein. Number is either Poetical or Oratorical. A Poetical Number is that which is confined to a perpetual Observation of certain Spaces.

Poetical Number.

Rhyme.

A Number Poetical, is either *Rhyme* or *Meter*. *Rhyme* is a Poetical Number, containing a certain Number of Feet, without any Regard to the Quantity of the Syllables whether long

long or short. A *Meeter* is a Poetical Number consisting of certain Feet, of which the last Foot hath the last Syllable Indifferent or Common, that is, Long or Short.

Meeter.

Oratorical Number consists of Feet, but not any certain Number.

An *Epizeuxis*, is when a like Sound is repeated in the same Sentence without Intermission.

Epizeuxis.

An *Anadiplosis*, is when a like Sound or Word without Intermission is repeated in divers Sentences, *i. e.* when it ends one and begins another.

Anadiplosis.

An *Anaphora*, is when a like Sound is repeated in the beginning of Sentences following one another.

Anaphora.

An *Epistrophe*, is when a like Sound is repeated in the close of Sentences.

Epistrophe.

An *Epanalepsis*, is a Repetition after a long Parenthesis.

Epanalepsis.

Epanados, is when Two Things rehearsed together are spoken of afterwards severally.

Epanados.

Paranomasia, is when a Word being changed in a Letter or Syllable, it is also changed in Sense and Signification, as, *O Tite Tute Tati, tibi tanta Tyranne tulisti.*

Paranomasia.

A *Proleptoton* or *Traductio*, is a Repetition of Words of the same Lineage.

Proleptoton.

Logismus or absolute Reasoning, is when a Sentence is composed without any talking with another Person supposed.

Logismus.

Oephonefis, is a Figure in Reasoning by way of Exclamation, by an Adverb expressed or understood.

Oephonefis.

Recalling of one's self, is when something is called back.

Recalling.

Epanorthosis, is when something preceding is called back by correcting it.

Epanorthosis.

Aposiobresis, is when the close of a Sentence begun is stopp'd, by keeping in a part, which yet is understood.

Apostrophe,

Apostrophe.

Apostrophe, is when a Speech is directed to another, than was by the Speech it self at first intended.

Prosopopœia.

A *Prosopopœia*, is when in our Oration we suppose another Person to be speaking.

A Figure in reasoning Dialogue-wise, is when a Sentence is composed in Form of a Conference: This consisteth in Question and Answer, in Consenting or Dissenting Dialogism.

A Figure of Consenting Dialogism, is when one's Answer doth admit of the Objection expressed or understood; yet so as that from thence the Inconsequence of the Objection may be shewed if need be.

Dissenting Dialogism, is when one's Answer doth impugne or cross the Objection.

Memory.

See the following
Page.

Memory, is a natural Faculty or Endowment, which is as much as can be said of it: Only I will in room of what might have been expected thereof, here note some Examples of Persons of such wonderful Memory as to repeat vast Numbers of Names, Words, &c. at once or twice hearing, either backward or forward.

Persons of most
extraordinary Me-
mory.

1. *Seneca* could recite Two Thousand Names upon once hearing of them. See at the Marginal Note Logick in *INVENTIONS*.

The Schollars of
Archippus, and at
Lyfades at *Thebes*
in *Greece* learnt the
Precepts of *Pytha-*
gorus by Heart,
making use only
of their Memories
instead of Books.

2. *Zuinger* in his 4th Book of the 17th Volume of his great *Theater De Vita Humana*, among divers others makes mention of a Young Man, Born in the Isle of *Corfica*, who could readily recite, after once hearing, Thirty Six Thousand Words of all Sorts, either forward, backward, or any way, and taught this Science to any one.

3. Historians tell us *Cyrus* the Great could call all the Soulders of his Army by their Names.

4. *Caineas* the Embassador of *Pyrrhus* King of *Albania*, coming to *Rome* in his Master's Behalf,

Behalf, the next Day after his Arrival saluted the Senate and People all by their Names and Surnames.

5. Pope *Clement VI.* had so good a Memory, that whatsoever he read he made absolutely his own, and never forgot it; the Cause of which Faculty *Petrarch* ascribes to him from a Wound given him on his Head, by which some Obstructions were dissolved, and the Passages of the Brain opened, whereby a commodious Way was made for the Spirits to pass to and fro.

6. *Carmides a Græcian*, could repeat all the Names of the Books disposed in a large Library just as they stood in Order. But now 'tis time we return to the last Part of Rhetorick, and that is

Pronunciation, ought to be accompanied Pronunciation. with some decent Action and Comportment of the Body. Words in your Oration ought to be chose with Care, and those used that are most Polite. Too many Consonants, or Vowels, coming together are to be avoided; and Words of extraordinary length, as well as Monosyllables, where Polysyllables may be had, are to be Rejected. A Multisyllable better answers a Monosyllable precedent, than a Monosyllable a Multisyllable. Tautology, or the often Repetition of a Word, is by no means to be used. Circumlocution, or many Words, are also to be avoided where few will serve, and be as Expressive. Omoptota's, and Words of the like Termination, being next to Tautologies, are to be severed. The weightiest Words should be placed in the Beginnings and Ends, because they make deepest Impressions. Transposition of Words are more incident to the Learned Tongues, yet not wholly omitted

Of Stile.

Exrampore.

Of Action in Delivery.

omitted in the Modern. Stile ought to be varied, according as it is prepared for the Ear, or for the Eye. An open and free Stile is necessary in Speaking, a stricter is to be used in Writing; but therein use Caution, for the same Schemes become not a History and Panegyrick, a Letter and an Oration, a Controversy and a Moral Discourse, a Poem and a Fable. Some must be Heroical, some Submissive, others Smart, Grave, Jocund; and all of these having their Graces and Defects. Extemporal Eloquence must be careful to use a long and compassing Stile, (so that he do not lose himself therein) that whilst he slowly Effunds what is already prepared in his Memory, the Fountain of his Wit may be replenished with more, and never suffer himself to be quite exhausted; therefore Metaphors, Similies, and Paraphrases thereupon are necessary. For acquiring of Eloquence and Stile, you ought to be familiar in reading the Rhetoricians Books and Orations, as also with Elegant Historians. (See in *History*.) Whatever Stile you chuse, be sure to be Perspicuous therein, neither being too Vain in Ornaments, nor too Barren, both which are troublesome to an Auditor. In the Delivery let your Words be laid down distinctly, which not only gives Grace to the Speaker, but helps the Memory of the Hearer; don't Rant, nor yet seem to whisper your Words, but let your Tone, as your Stile, be varied, higher, lower, swifter, slower, as you would make your Purpose be distinguished with your present Subject. Let not the Actions be like a Stage-Player or Mountebank, altogether Apish or Confused. The several Parts of Action in Pronunciation of your Oration is thus stated by some; The Hand is to be held out when

we

we speak of Begging; Up when we speak of Praying. The Hand beating down is used when a Thing is spoke of Anger; Clapping the Hands together when speaking of Wonders; Opening one, or both Hands, when making a Thing plain, or Explaining; Arms drawn back close to the Sides when Requesting; Putting out the Forefinger when Demonstrating; The first Finger turned down for Urging; Put up for Threatning; The middle Finger put out for Reproaching; The left Thumb touched by the Index of the right Hand for Reasoning and Disputing; The touching a Finger with the other Hand for Distinguishing and Numbring; The Hand brought towards one in saying any Thing of himself; Towards the Head when speaking of the Understanding; To the Breast when of the Will, Soul or Affections; Folding the Arms when imitating Sadness, &c. Yet beware of too much Motion, rather using too little, than overmuch. See before in *LOGICK*, and in the following

A U T H O R S,

Aristotle's Rhetorick, Smith's Rhetorick, Butler's Rhetorick, Farnaby's Rhetorick, Walker's Rhetorick, Lami's Rhetorick. Oul' Art de Parler, French. Port Royal's Art of Speaking, Instructions for Oratory. See Cicero's Orations, Livii Orationes.

Of *MUSICK*.

MUSICK is a Science which teacheth us what belongs to the Theory and Practise of Harmony, in modulating *Notes* in either Voice or Instrument.

It doth consist in Singing or Setting. In Singing there are Five Things to be considered, 1. The Number of the Notes; 2. Names; 3. Tunes; 4. Times; and 5. Their Adjuncts. The Number of Musical Notes are Three Times Seven, or Twenty One, (that is, from the lowest Note on a Base, to the highest on a Treble; tho' some Bases and some Trebles reach above this Compass) for there is in Nature but Seven distinct Notes in the several Cliffs of the Scale; for the Eighth and Fifteenth have the same Sound (and therefore the Name) of the First; the Ninth and Sixteenth of the Second; Tenth and Seventeenth of the Third, &c.

G. A. B. C. These Thrice Seven Notes are discerned by
D. E. F. their Places. At the beginning of each Rule and Space, is placed one of the First Seven Letters of the Alphabet; and these Letters are thrice repeated one above another, the Letter G being put upon the first or lowest place of each *Septenary*, being the first Letter in the word *Greece*, and in the first *Septenary* retained the Name and Form of the *Greek* Γ *Gamma*, in remembrance this Art came from the *Greeks*.

By these Seven Letters (or Cliffs) the Scale is divided into Three several Parts of Musick; the First, and lowest, is called the Base; the Second, or middle, the Mean; the Third, or highest, the Treble. For

For the Seven Notes, signed by the Seven Letters, are but Six several Names, invented to help the Learner in Tuning them, *Ut*, *Re*, *Mi*, *Fa*, *Sol*, *La*; and for the Seventh Note, because it is but half a Tone above *La*, as the Fourth is above *Mi*, (whereas all the rest are whole Tones) it is fitly called by the same Name with the Fourth, and so the next will be an Eighth, or *Diapason* to the First, and consequently placed in the same Letter or Cliff, and called by the same Name. And thus they were wont to be placed in the Scale, in which the first Name *Ut*, being placed on the same Line with the *T*, caused the whole Scale to be called the *Gamut*. But the Moderns have rejected *Ut* and *Re*, finding the other Four sufficient.

Altho' the whole Ordinary Scale of Musick doth contain Three *Septenaries* of Lines and Spaces; yet when any of the Parts which it is divided into, come to be Prick'd out by it self in Songs or Lessons, five Lines is sufficient to contain the Compass of Notes thereunto belonging: And if there be any Notes that extend higher or lower, it is usual to add a Line in that place with a Pen.

Tho' the Seven Letters set at the beginning of each Rule and Space, are Seven Cliffs or Cleaves, yet Four are only useful; the First called *F Fa ut* Cliff, marked F is proper to the Base, or lowest Part, and set at the beginning of Songs or Lessons; the Second, *C Sol fa ut* (proper to the Mean) marked C ; the Third, *G Sol re ut* (proper to the Treble) signed G . These are called the Three Signed Cliffs; the Fourth is *B* Cliff, proper to all
 I 2 Parts,

Parts, as being of Two Natures, Flat (b) and Sharp ✕, the First called sometimes *B fa*, the other *B mi*. These serve for the Flatting and Sharping of Notes.

Concerning the Fourth Cliff, *Note*, *B fa* alters the Name and Property of the Notes before which it is placed, changing *mi* into *fa*, and making that Note to which it is joined, a Semi-Tone, or half a Note lower; 2. *B mi*, or *B Sharp*, alters the Property of the Notes before which it is placed, but not the Name; for it is usually placed before *Fa* or *Sol*, which retain their Name, but their Sound is half a Tone higher. 3. These Two *B* Cliffs are not only placed at the beginning of the Lines with the other Cliff, but are usually put to several Notes in the midst of a Song or Lesson for Flatting and Sharping of Notes.

Of these Four Notes now in use, *Mi* is the Principal, or Master-Note; for that being found, the rest are known. For after *Mi*, sing *fa sol la* twice upward, and *la sol fa* twice downward, and so you come to *Mi* again in the same Cliff both ways.

This Note *Mi* hath its Being in Four several Places, but in but one of them at a time; its proper place is in *B mi*, but if a *B fa*, or Flat, be in its Place, then it is in *Ela mi*; but if a *B fa* be placed there also, then it is in *A la mi re*; if a *B Flat* come there also, then it's removed into its Fourth Place, which is *D la sol re*, as may appear by Examples in the Musician's Books.

Of the Tune of
Notes.

The Tunes of the Notes cannot be declared by Precept, but must be learned by the Voice of the Teacher, or Tune of some Instrument, only observe from *mi* to *fa*, and so from *la* to *fa* is but half a Tone, but between any other Two Notes

Notes is a whole Tone, as from *fa* to *sol* or *sol* to *la*. And in the first guiding of the Voice, it will much help to found by degrees all these Notes, as *Sol la mi*; and at the second Tuning leave out *la*, the middle Note, this will not only help you to Tune a Third, as from *sol* to *mi*, but will also help in raising of Fourths and Fifths. The Names of Notes, in reference to their Tunes, are *Sol*, *La*, *Mi*, *Fa*; and their

Names, in Proportion of Time, are Eight, *A Large*, *Long*, *Breve*, *Semi-Breve*, *Minum*, *Crochet*, and *Semi-Quaver*; the Four first are of Augmentation, the Four latter of Diminution.

Of the Time of Notes.

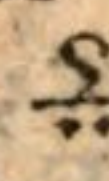
In Augmentation, the *Large* is Eight *Semi-breves*, the *Long*, Four; the *Breve*, Two; the *Semi-breve* is one Time, or Note.

In Diminution, the latter Four do decrease in this Proportion; Two *Minums* make a *Semi-Breve*, Two *Crotchets* make a *Minum*, Two *Quavers* make a *Crochet*, and Two *Semi-Quavers* make a *Quaver*.

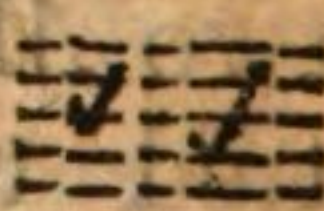
There belongs to Notes, described by their Number, Name, Tune, and Time, these Seven Things, a *Tye*, a *Repeat*, a *Pause*, a *Direct*, a *Close*, *Single and Double Bars*, and several *Moods*.

A *Tye* is a *Semi-Circle*, whose two ends point to the two Notes conjoined, as when two *Minums*, or one *Minum* and a *Crochet* are tied together; as also, when two or more Notes are to be sung to one Syllable, or two Notes or more to be plaid with one drawing of the Bow on the Violin. The middle and principal Note is the *Semi-Breve*: And when any Note, and its half Note, in the same place, are conjoined for one Syllable, the Mark of

the half Note, and of the Ligature too, is a Point set by the Note, and it is as much as if with the Note its half Note were expressed and conjoined by Ligature, and prolongeth the Sound of that Note it follows, to half as much more; thus a *Semi-Breve*, which is of its self but two *Minums*, having a Prick after it, is made three *Minums* in one continued Sound, and so in other Notes.

A *Repeat* is either of the same Notes and Ditty together, or of Ditty with other Notes, and is marked thus , and is used to signify that there must be a Repetition of that part again.

A *Pause* is a Mark of Rest or Silence for the Time of some Note. A Line descending from a Superior Rule, and not touching the Rule below, is a *Semi-Breve* Rest; the like Line rising from an Inferior Rule, and not touching the Rule above, is a *Minum* Rest; the same with a Crook to the Right Hand, is a *Crochet* Rest, and to the Left Hand a *Quaver* Rest; also a Line reaching from Rule to Rule, is a *Breve* Rest, or a *Pause* of two *Semi-Breves*; a Line from a Rule to a third Rule, is a Long *Pause*, of four *Semi-Breves*, and two of them together make a Large *Pause*, or a Rest of eight *Semi-Breves*.

A *Direct* in the end of a Line sheweth where the Note stands in the beginning of the next Line, and is marked thus, .

A *Close* is either Perfect or Imperfect. A Perfect *Close* is the end of a Song noted thus,  or , or with two Bars thwart all the Rules. An Imperfect *Close* is the end of a Strain, or any place in a Song, where all the Parts do meet, and Close before the end, and it is marked with a single Bar. .

The usual Moods are Two; the Imperfect of the more, when all goes by two except the *Minums*, which goes by three, as two *Longs* to a *Large*, two *Breves* to a *Long*, two *Semi-Breves* to a *Breve*, three *Minums* to the *Semi-Breve*, with a Prick of Perfection. This Mood is thus Signed $\overline{\text{C}}\overline{\text{F}}$, and is usually called the Triple-Time.

The other usual Mood is the Imperfect of the less, when all goes by two, as two *Longs* to a *Large*, two *Breves* to a *Long*, two *Semi-Breves* to a *Breve*, &c. This is called Common-Time, because most used, marked $\overline{\text{C}}$.

Aristotle averreth Musick to be the only Disposer of the Mind to Vertue and Goodness, wherefore he accounteth it among those Four Principal Exercises wherein he would have Children instructed; and altho' *Lycurgus* imposed most sharp Laws upon the *Lacedæmonians*, yet he ever allowed them the Exercise of Musick. Some attribute it to the Vertue of Divination, (the *Sybils* Propheying best after the hearing of Musick) and say that thereby Men may make a Judgment of the Habits of the Body, Affections of the Mind, and Manners of Men. There is no end of this Art, every day producing new Discoveries therein.

The Ancients have divided Musick into, 1. *Enharmoniack*, which by reason of its profound Abstruseness, and Impossibility of Discovery, they laid aside; 2. The *Chromatick*, which by reason of its wanton Measures they utterly refused; 3. The *Diatonick*, which they only admitted. Others have distinguished the Moods, as derived from fundry Countries, for whose particular Genius they seemed at first

The Ancients divided Musick into Enharmoniack.

Chromatick.

Diatonick.

to have been contrived, of which there are
 Three, viz. the *Lydian*, which was shrill; the
Phrygian, (which was warlike, and stirred up
 Men to Fury and Battle, by which *Timotheus*
 incited *Alexander* to Arms;) and the *Dorick*,
 called Religious, being more Grave, Honest,
 and Modest. These Three are said to be of
 greatest Antiquity, and the *Dorick* preferred
 above the other Two. To these, *Sapho*, the
Lesbian, added a Fourth, termed the *Mixoly-*
dian, only fit for Tragedies, and to move
 Compassion. To these Four Moods there are
 who have added others, which they call Col-
 lateral, the *Hypodorian*, *Hypolidian*, and the
Hypophrygian, to the end there might be Seven
 Correspondent to the Number of the Planets.
 To all which, *Ptolomy* adds an Eighth, called
 the *Hypermixolydian*, being the sharpest and
 shrillest of all. *Marcian*, according to the
 Tradition of *Aristoxenus*, numbers Five Prin-
 cipal Moods, and Ten Collateral.

The Exercise of Musick is an Enemy to
 Melancholy, which *St. Chrysostom* calls the De-
 vil's Bath; and Vocal Musick openeth the
 Breast and Pipes, and helpeth stammering in
 Speech of those that Sing.

The Invention of several Musical Instru-
 ments, see in *INVENTIONS*.

Musick of sound Discords will yet make
 sweet Harmony, and it is no small Surprise
 when Two Basons, Bowls, Brass Pots, &c.
 of the same bigness, the one being full, the
 other empty, shall, stricken, be a just *Diapa-*
son in sound one to the other; or that Two
 Lutes (of equal size) laid upon a Table, and
 tuned Unison, or alike in the *Gamut*, one
 String touched on one Lute makes the same
 String (untouched) to answer on the other
 Lute.

Lute. And sure there is no ordinary Charm in Musick, that gentle strokes on Brazen Vessels, or the like, should draw down a Flight of wandering Bees, and the sound of one single Pipe charm Hundred Ey'd *Argus* asleep.

There are several notable Examples mentioned in Ancient Historians of famous Musicians, such as *Orpheus*, *Tirpander*, *Timotheus*, *Arion*, *Aristonus*, and *Cunomus*; between which Two last was a famous Tryal of Skill, and the Victory judged to *Cunomus*, by means of a Grasshopper leaping on his Harp and supplying the defect of a broken String. These, and others, by their Musick, are said to have moved the Passions of Mens Minds at their Pleasure, appeased the Disconsolate and Desperate, healed even the Sick, tempered the Amorous, and wrought most wonderful Effects, as may be seen in *Ælian*, *Pliny*, and *Plutarch*; and there are those, even at this Day, affirm that the sound of Musick, or Musical Instruments, is a sovereign Remedy for the Sting or Venom of a *Tarantula*, (a little Creature like a kind of Spider;) and that Musical Harmony helps Madness, and eases the most extream Pains in the *Sciatica*, or Hip-Gout, as well as that it allayeth the Fury of Anger, and is a lengthener of Life.

The best Composers and Performers in this admirable Art, have been *Ludovico de Victoria*, after him *Orlando de Lasso*, *Horatio de Vecchi* of *Modena*, *Giovanni Croce*, Master of St. Mark's Chappel in *Venice*; *Luca Marenzio*, for Madrigals; *Peter Philips*, Organist at *Brussels*, an *English* Man. *Boschetto*, *Claudio de Monte Verd*, *Guionnani Ferreti*, *Stephano Felis*, *Giulio Rinaldi*, *Philipo de Monte*, *Andrea Gabrieli*, *Cyprian de Rore*, *Palaviceno*, *Geminiano*, Seignior *Nicholao*, &c. of the *Italians*. Of

Of the *English*, was Mr. *Philips*, before named; Mr. *Bird*, who did equal, if not excel any of *Italy* and *France* (who are very sparing in the Commendation of Strangers, in regard of the great Conceit they hold of themselves) Doctor *Douland*, *Thomas Morley*, Mr. *Alphonso*, Mr. *Wilbie*, Mr. *Kirbie*, Mr. *Wilkes*, *Michael East*, Mr. *Bateson*, Mr. *Dearing*, &c. Since we have had among others, Mr. *Henry Purcell*, (Inferior to none in the World whilst Living) how much soever the *Italian* may attribute to himself.

Now Living, is Mr. *Daniel Purcell*, Doctor *Blow*, Mr. *Finger*, Mr. *Eccles*, Mr. *Banister*, Seignior *Baptist*.

King *Henry VIII.* of *England*, could not only Sing his Part sure, but Composed a Service for the Church of Four, Five, and Six Parts, as *Erasmus* witnesseth.

The Duke of *Venosa*, an *Italian* Prince, and the Landtgrave of *Hesse*, both Living about Anno 1620. gave excellent Proofs of their Knowledge and Love to Musick.

Leopold VI. late Emperor of *Germany*, who died in the Year, 1705. Composed well himself, and delighted so in Musick, that no Place abounded more with Musicians than *Vienna*, his chief City, in which, as some relate, were to the Number of Ten Thousand.

The best Eccho in the World, is that of *Brussels*, reflecting the Voice or Sound of an Instrument Fifteen Times; and that near *Circus Caracalla* at *Rome*, which is said to Repeat a whole Verse of *Virgil*.

Above the Manor-House of *Woodoaks* in *Herifordshire*, on the Manor-Hill, is an Eccho
will

will Repeat to a Trumpet Twelve Times. *Relatione Ben. Titchbourne Mil.*

A U T H O R S,

Guido Aretine, Euclid, Ptolemy, Aristoxenus, Faber Stapulensis, Boetius, John Kepler, Salinas, Zarbins, Vincentius Galileus, in Italian. See Playford's Introduction to Musick, Sympson's Compendium of Musick.

Of ARITHMETICK.

ARITHMETICK is the Art of Numbering, which Teaches us Rules for Casting Accompts, and Instructs us how to Adjust and Cast up Sums of Money, adding Several by Addition into One, which Substraction again takes away, Division separates into Parts, and Multiplication doubles, trebles, &c.

This Art is accounted the Mother of Sciences; and *Pythagoras* invented many strange Mysteries in Number, averring with great Presumption, *The World could not have been Created by G O D, had not Numbers been Instrumental; and that all Divine Knowledge was contained in Numbers: And Marcus, Magus, and Valentinus* declared they were able to discover an innumerable Company of Secrets in Religion by the Assistance of Numbers only.

For the Entertainment of the more curious Readers, I shall here insert (before I speak of the Fundamental Rules of this Science) a Brief Treatise of the Nine Figures, which constitute
Numbers

Numbers, and make up the Science of Arithmetick.

Of the Figure
1.

Its Epithets.

The Figure 1 is the Root of all Number, because all Numbers, Great or Small, derive themselves from this Figure. The Divine Poet, *Du Bartas*, in his Works, (from whence we take some of this present Discourse) calls it, *The Nursery of All*; because from 1 Man infinite others are proceeded, and of 1 Creature infinite others in the Waters, Land, and Air. It is also by the same Author called *The Scope of Polymny*, whereby is meant that the Intention of all Learned and Studious Men, in their Conferences and Writings, aim at some one prefixed End. And further, *No Number*, because a Number must be composed of more than one Unity, as also for that the Unity is more than a Number, because it giveth it a Being, and potentially comprehendeth all Numbers, and in effect is in all.

1. Its Attributes.

This is added in Praise of Unity, That GOD is 1, the Church 1, altho' composed of divers; there is 1 Creator, 1 World, 1 Man, (for of his Rib was Woman framed) 1 Tongue before the Confusion of *Babel*, 1 Law, 1 Gospel, 1 Faith, 1 Baptism, 1 Table of our Lord, 1 Hope, 1 Charity, 1 Paradise, and 1 Eternal Life. There might be other Significations of this Number touched upon, yet let no One think we gather any thing that favoureth *Geomancy*, (an Art that by certain Points separated either by Chance or Force on the Earth, composes thereout certain Figures or Numbers, likened to those in the Heavens, making a kind of Divination) or those Men, or their Speculations, that pretend to build Rules of Religion, and Establishment and Subversion of Publick States on Numbers; and much less

Foun-

Foundation can any Man find in the Impostures of Arithmeticians or Magicians, &c. who abusing the Passages of Holy Scripture, (making mention of divers Numbers) have thought to have found therein a Practice of Divination, or some Power to Invoke Spirits, and Exercise unlawful Matters, as some have Taught in their Printed Works.

The Figure 2 is called by *Du Bartas*, *One's Heir Apparent*. The *Pythagoreans* called the Number 2 *Isis* and *Diana*. It is the Father of even Numbers; but this 2 is the ruin of Unity, for to divide a Thing is to destroy it. *Zaratas* (who was Master to *Pythagoras*) called 2 the Mother of Numbers, and 1 the Father; whereof *Plutarch* yieldeth some Reason for in his Treatise of the Creation of the Soul. *Vide Aristotle*, in the Eighth Book of his *Metaphysics*.

Of the Figure
2.

The Figure 3 some have supposed was the first of Numbers; for as touching 2, the *Pythagorists* call it not a Number, but a Confusion of Unities; which, to speak properly, are not Numbers, but Sources and Roots of them. *Plutarch* describes the Praises of this Number 3 in his Treatise of *Isis* and *Osiris*, and in other Places, of which the Prince of Poets hath sung,

Of the Figure
3.

Numero Deus impare gaudet.

Understanding not all odd Numbers, as 5, 7, &c. but 3 properly, which is the first of Odd Numbers, and the beginning of Solid Bodies, divers in their Superficies. The Triangle hath been named *Minerva* by the *Pythagorists*, who, in their Purifications and Washings, used the Number of 3, which Secret is touched by *Virgil* in the Sixth of his *Æneids*,

Idem

Idem ter Socios pura circumtulit unda.

And in the First of the *Georgicks*,

Terque novas circum felix eat hostia fruges.

And *Ovid* in the Second of his *Fasti*,

Et digitis tria thura tribus sub limine ponit.

Likewise in his *Sixth*,

Protinus arbutea postes ter in ordine tangit.

Fronde ter arbutea limina fronde notat.

3. Its Attributes.

God's Apparitions
3 manner of ways.

There are divers other Testimonies to this purpose which we omit, as also the Search of Ternary Number, curiously enough applied by some Men to divers Mysteries in Religion. It represented the Trinity; and some have observed by this Number the Order of Angels in the World, in Sciences, Vertues, and infinite other Things. We find Three sorts of Apparitions to God's Servants; the First in Form of an Angel, or a Man; as appeareth in the Histories of *Abraham*, *Jacob*, *Joshua*; the Second after a special manner, as unto *Moses*, which the Understanding of Man is not able to comprehend; the Third in Dreams, witness *Jacob*, *Joseph*, and *Daniel*; or Visions, which have been Representations of Things to come, which the Prophets saw and understood. There are Three Considerations in Man's Body, Matter, Stature, and Resurrection.

[Hugo, *Miscellan.* 2. *codic.* 1. 3. p. 17. saith, *There is Above Us a Creating Trinity, Father, Son, and Holy Ghost; In Us a Created Trinity, Under-*

Understanding, Will, and Memory; About Us a Dangerous Trinity, Titillation, Delectation, and Consent; Under Us an Unhappy Trinity, (into which we fall by Sin) Ignorance, Weakness, and Impurity. Reason falleth into Triple Ignorance, of Good and Evil, True and False, Suitable and Disproportionable; Memory into three kind of Thoughts, Affectionate, Burdensome, and Vain, or Idle, &c.]

The Figure 4 is called the *Cubes Base*; a *Cube* or *Square* having a Base or Foot of 4 Of the Figure 4. Angles; and the *Cube* among Solid Bodies is most Excellent and Perfect, representing the Firmity, Continuance, and Virtue. See *Peter Bongus's* Observations of Numbers, which he Entituleth, *Mysticæ Numerorum Significationis Liber*, who leaveth almost nothing untouched concerning Numbers, and above all, disputeth at large upon the 4.

The 4 in his Parts accomplisheth 10, being considered two times and one half; also in this sort 1, 2, 3, 4, makes Ten. It is the Number of the Name of GOD, the *Hebrews* writing in 4 Letters the Name of GOD, and calling him Ineffable, pronouncing *Adonai*, instead of *Jehovah*, who is commonly called of the *Theologians*, *Nomen Tetragrammaton*, that is, a Name of 4 Letters; whereupon *Reuclin* hath amply discoursed in his *Cabala*, and in his Books *De Verbo Mirifico*. Other Nations have given GOD a Name of 4 Letters, 4. The Number of the Name of GOD, in almost all Languages.

The *Chaldeans*, E S G I A H E R, that is, the Creator of the World.

The *Assyrians*, A D A D.

The *Egyptians*, A M U N.

The *Persians*, S Y R E.

The Ancient, *Romans* A J U S,

The

Thursday hath its
Name from *Thar*.

The Greeks, T R O S.

The Mahometans A L L A.

The Goths, T H O R. Their great God they
call O D E N and E R O E.

Clemens Alexandrinus saith, that the An-
cient Priests of *Macedona* called G O D, B E D I.

The Etrurians Name him E S A R.

The Sclavonians, B E O G.

The Spaniards, D I O S.

The Italians, I D I O.

The Almains, G O T T.

The French, D I E U.

The Latins, D E U S.

But our Author leaves the Observations upon
the Names A D O N, A D A I, J E H O, J E S U, &c.
for it hath pleased the Spirit of G O D to settle
us on the Substance of Things, and not on the
Number of Letters. This 4 is the Number
of

The Elements; Earth, Water, Air, and Fire.

The Seasons; { Spring, Summer, Autumn,
Winter.

The Vertues; { Prudence, Justice, Fortitude,
Temperance,

The Humours; { Sanguine, Cholerick, Phleg-
matick, Melancholly.

The Winds; East, West, North, South.

Parts of the World; { Europe, Asia, Africa, Ame-
rica,

4. The Number of
the chief Parts in
the Sciences. *Parts of Gram-
mar*; { Orthography, Etymology,
Syntax, Prosody.

*Parts of Histo-
ry*; { Commentaries, Annals, Dia-
ries, Chronologies.

*Rules in Arith-
metick*; { Addition, Substraction Mul-
tiplication, Division.

Chymistry; — { Mettaline, Lapidary, Vege-
table, Animal.

Magick;

<i>Magick</i> ; — —	{ Divine, Theurgick, Geotick, Natural.
<i>Physick</i> ; — —	{ Rational, Sophistical, Dog- matical, Operative.
<i>Logick</i> ; — —	{ Natural, Artificial, Doctri- nal, Practical.
<i>Musick</i> ; — —	{ Enharmoniack, Chromatick, Diatonick, Mixolydian.
<i>Painting</i> ; — —	{ Statuary, Plaſtick, Caſting, Engraving.
<i>Meteors</i> ; — —	{ Fiery, Airy, Watry, Appear- ing Meteors.
<i>Animals</i> ; — —	{ Volatiles, Aquatiles, Terre- ſtrials, Reptiles.
<i>Plants</i> ; — —	{ A Tree, a Shrub, an Under- ſhrub, an Herb.
<i>Divination</i> ; —	{ Phyſiognomy, Chiromancy, Soothſaying, Dreams.

There are Four Authors commended for the	Hebrew ;	{ <i>Moses, David, Solomon, and</i> <i>Eſay the Son of Amos.</i>	4. The Numbers of the chief Authors commended of ma- ny Languages.
	Greek ; —	{ <i>Homer, Plato, Herodotus and</i> <i>Demosthenes.</i>	
	Latin ; —	{ <i>Cicero, Caesar, Saluſt and Vir-</i> <i>gil.</i>	
	Italian ; —	{ <i>Boccace, Petrarch, Ariosto,</i> <i>and Taſſo.</i>	
	Arabick ;	{ <i>Aben-roes, Eldebag, Avicen,</i> <i>and Ibnuſerid.</i>	
	Dutch ; —	{ <i>Penther, Luther, Peucer and</i> <i>Butric.</i>	
	Spaniſh ;	{ <i>Guevarra, Boſcan, Granada</i> <i>and Garcelace.</i>	
	French ;	{ <i>Clement Marrot, Jacques, A-</i> <i>myot, Ronſard and Pleſſis.</i>	
	Engliſh ;	{ <i>Sir Tho. Moor, Sir Nich. Bacon,</i> <i>Sir Philip Sidney, and Sandys.</i>	

There are Four Sorts of Medicinable Earths, whose Properties are mentioned by *Pliny*, Ch. 16, 17. *Lib.* 35. And *Dioscorides* in his Fifth Book, 127, 128, 129, Ch. and others.

Four chief Ages.

There were Four Ages chiefly famous, 1. From *Adam* till *Noah*, containing 1656 Years. 2. From *Noah* till *Abraham*, containing 292 Years. 3. From *Abraham* till *David*, containing 492 Years. 4. From *David* until the Surprizal of *Jerusalem* under *Zedechias*, containing 475 Years.

Observations of the 4 from Scripture.

There are Four Things Insatiable, *Proverbs* 30, 15. Four Hidden, Verse 18. Four Troublesome, Ver. 21. Four full of Wisdom, Ver. 24. Four Things to be feared, *Ecclesiasticus* 26. 5. And there are Four Chapters in *Ruth*, Four in *Jonah*, Four in *Malachi*, being Books in the Old Testament, Four in *Philippians*, Four in *Colossians*, and Four in 2 *Timotheus* in the New Testament.

There are Four different Sort of Dreams; the Natural, Devilish, Extraordinary and Divine.

There are Four Reasons why the Devil assumed to tempt *Eve*, which may be read in the Summary upon *Du Bartas*. As also,

Four Reasons why the Earth should be Peopled with Inhabitants of divers Conditions.

There are Four Rivers of Hell of which Poets make chief mention, viz. *Styx*, *Acheron*, *Phlegeton*, and *Cocytus*; to which is also added *Lethe*.

The *Pythagoreans*, as *Macrobius* recited, bear so great Reverence to the Four, they swore by it.

Of the Figure 5.

The Figure 5. called *Hermaphrodite*, because composed of 2 the Female, and 3 the first of all Numbers. *Plutarch* in his Treatise of the Cessation of Oracles, and of the Inscription of *Ei*,

Ei, telleth Wonders of the Excellency of the 5. This is also called a Circular Number, as likewise the Number or Figure 6, because the Circle turns to the Point from whence it begins; so this Number multiplied by it self doth end always in 5, as 5 times 5 makes 25, that again by 5 makes 125, &c. It is the Number of the Zones.

The Figure 6. *St. Augustine* in his Fourth Book of the Trinity, and in the Fourth Book upon the Text of *Genesis*. Likewise *Hugo* of *St. Victor*, in his Book of the Sacraments, hold this Number of 6. to be perfect, by reason whereof God was pleased to Create all his Works in 6 Days, to shew that nothing was created superfluous, neither was any Thing defective. This Number is properly then Sur-named *Analogique*, that is proportioned, and having relation to it self, 3 is the half of 6; 2 the 3d Part; 1 the 6th Part; likewise 1, 2 and 3 make 6. This Number multiplied by it self, ends always in 6, as 6 times 6 makes 36, and that by 6 makes 216, &c. It is wonderful to conceive there is so few, and how rare these perfect Numbers are, so of perfect Men, for betwixt 1 and 1000,000,000,000 Numbers, there is but 10, that is 6, 28, 486, 8128, 120816, 2096128, 33550336, 536854528, 8589869056, and 137438691328, with this admirable Property, that alternately they end all in 6 and 8, and the Twentieth perfect Number is 151115727451553768931328.

Of the Figure 6.

Its Epithet.

See *Potter's* Interpretation of the Number 666, or Number of the Beast and some Critick ascribe this to be the Number of Words in the solemn League and Covenant. See *Heath's Chron.* Fol. 829.

The Figure 7. called *Critical*, that is to say Judging, because that on the 7th Day Physicians give their Censures of Life or Death in Maladies. Sometimes because of the Resistance of Nature they double the Number, and expect the 14th Day, which is (as *Hypocrates* saith

Of the Figure 7.

Climacterical Year,
what.

Augustus sent a
Letter to his Ne-
phew Cajus to Ce-
lebrate his Escape
of this Year.

faith in his Aphorisms) the Term of Infirmities of such as are simply sharp. If the Sick pass this Day it is ordinarily observed it extendeth to 21, that is 3 times 7. See *Galen* in his Book *De Diebus Criticis*, *Censorinus* in his Works *De die Natali*, and that which the Physicians say of Septenary and Climacterical Years; such is the 49 composed of 7 times 7, and the 63 composed of 9 times 7. This Number is also named Male and Female, because a Compost of even and odd Numbers. And it encloseth the 3 and 4, and consequently is a Number wholly perfect. See *Scaliger* in his 365 Exercise against *Cardan*. It is the Number of the Planets; and of the Sabbath, for our Lord rested on the 7th and Sanctified it. *Rome* is built on 7 Hills. The 7 Wonders of *Dauphine*; see *Gorden's Geog.* 200. The 7 Observables of *Avignon*. See *Morden* 201.

See the Marginal
Note about the
Isle of *Corfica*,
Page 135.

[There are 7 times 7 remarkable Things at *Rostock* in Germany, viz. 7 Great Doors to *St. Mary's Church*; 7 large Streets leading to the Market-Place; 7 Gates of the City towards the Land; 7 Bridges over *Warna*; 7 Towers on the Town Hall; and 7 great Bells therein; 7 great Linden Trees in the Common Garden.]

[Seven is observable at *Brussels*, for that there is 7 Publick Fountains, 7 chief Streets, 7 stately Houses, 7 Churches, 7 Noble Families, 7 Licensed Midwives, 7 Gates leading to different Exercises. See *Morden's Geog.* 182.

Of the Figure
8.

The Figure 8 is composed of Two Fours or Cubes, by reason whereof it is Sirnamed *Double-square*. Some have subtilized upon the Numbers of the Letters of the Greek Name *Jesous* of our Saviour, which being applied together make 888, that is to say 8 Unites, 8 Eights, and

and 8 Hundreds, applying also thereto certain Predictions of *Sibylla Cumea*.

[We read of a Caliph of Babylon who left at his Death 8 Sons, 8 Daughters, 8 Millions of Gold, 8000 Slaves, and 8 Kingdoms added to his Dominions.]

The Figure 9 Sirnamed *Sacred*, in favour of the 9 Muses. This Number in Musical Proportions is *Diffonant*, amongst the Astrologians it is *Sinister*. In *Hesiodus Theogenie*, and in *Virgil*, speaking of the 9 Creeks of *Styx* the Infernal River, they represent the Discords of Men's Complexions according as some interpret. See the Hieroglyphicks of *J. Pierius* in his 37th Book. This carries with it an excellent Property; for take what Number you will either in Gross or in Part, the Nines of the whole, or in its Parts rejected and taken simply, will be the same, as 27 it makes 3 times 9; so whether the Nines be rejected of 27, or of the Sum of 2 and 7, it's all one. So if the Nines were taken away of 240, it is all one if the Nines were taken away of 2, 4 and 0, for there would remain 6 in either, and so of others. This Figure holdeth all under it; for all Articles and Compounds, tho' never so great, are made of 9 Figures. The Angels in Heaven are of 9 Holy Orders, as *Seraphins*, whose Prince is *Mettaron*: *Cherubims* ruled by *Orphamet*: *Thraine*, whose Lord is *Zaphkiel*. Dominations under the subjection of *Zadkiel*: *Potestates*, whose Prince is *Camael*. *Vertutes* subject to *Raphaeh*. *Principates*, whose Ruler is *Hamiel*: Archangels, whose Lord is *Michael*, and Angels with their Prince *Gabriel*. There are 9 fundry Spheres moveable, which you may see in *ASTRONOMY*. There are 9 Exterior and Interior Senses, as Memory, Thought, Imagina-

Of the Figure 9.

9 Orders of Angels.
Vide in Metaphysics.

9 Spheres.

9 Senses.

9 Beatitudes.

Christ died the
9th Hour.Plato lived 9 times
9 Years.Of the Number
10.

Imagination, Perseverance, Hearing, Feeling, Seeing, Smelling and Tasting. The Beautitudes are to the number of 9. It pleased God in his Humanity to yield up his Holy Spirit the 9th Hour of the Day. Several other observable Things might be here inserted to the Praise of this Number, as *Plato*, that great Philosopher, lived 9 times 9 Years, &c. All the Rules and Grounds in the Science of Heraldry (according to *Gerard Leigh*, who much endeavours thereto) are to the Number of 9; but this *Guillim* doth discommend in him.

The Number 10 ought not to be forgot, tho' composed of but the first Figure and a 0, which Figure of 1 is before treated of, yet here with a 0, joined thereto comes under other Considerations: Of this Number *Ovid* in his *Fasts* speaketh properly:

*Semper ad usque decem numero crescente venit.
Principium spaciis sumitur inde novis.*

It conjoineth the Virtue of all the Numbers, which he holdeth as it were bound in it self, either Simply or by Multiplication. 2. As among the Geometricians a Line is the joining in one of divers Pricks or Points, so the 10 maketh the Line of Numbers, neither can any One pass farther, nor yet retire back: For a Man may add 1 to 9, 2 to 8, &c. by Multiplication, and redoubling of 10 we may set down as great a Number as we please, greater than the Waves or Sands of the Sea; for as some affirm, besides those which are in and about the Bounds of the Sea, that if there were nothing else but Sand to fill this whole World, admitting each Grain of Sand so small that 10 may make but One Grain of Poppy, there
needs

needs not to exprefs them, but the Number 30840979456, and 35 Cyphers at the end of it. *Clavius* and *Archimedes* maketh the Number something more, because they make a greater Firmament than *Tycho Brahe* doth. And by fupposing that 10 Grains of Sand make but a Grain of Poppy, there is nothing but comparing that little Bowl of a Grain of Poppy with a Bowl of an Inch, that with one of a Foot, and that to one of a Mile, and fo to the Earth, &c. whereby Man will find out how many are the Sands of *Lydia*, &c. notwithstanding certain Philofophers told *Gelon* King of *Sicily*, That the Grains of Sand were innumerable. But to return to the Number of 10, it is the Number God chofe for his Commandments. It is the Number of the Sibylls, viz. *Persica*, *Lybica*, *Delphica*, *Cumea*, *Samis*, *Helefpontiaca*, *Tiburtina*, *Albunea*, *Erythrea*, *Cumana*. It is the Number of the Perfecutions, raifed by the Roman Emperors againft the Christians, viz. 1. Under *Nero*. 2. *Domitianus*. 3. *Trajan*. 4. *Marcus Antoninus*. 5. *Severus*. 6. *Maximinus*. 7. *Decius*. 8. *Valerianus*. 9. *Aurelianus*. 10. *Dioclefian*. And it is worth Remark, that the moft famous City of *Rome* hath been Conquered and taken by Foreign Nations to the fame number of Times: 1. Under *Brennus* the Brother of *Belinus*, King of *Britain*, the *Gauls* took it. 2. By *Alaric* King of the *Goths*. 3. By *Genferick* King of the *Vandals*, a People which inhabited the Country now called *Swedeland*. 4. By *Totila* King of the *Goths*. 5. By *Odoarer* King of the *Heruli*, who drove *Augustus* out of *Italy*, and twice in Thirteen Years laid the Country defolate. 6. By *Theodoricus* King of the *Goths*, called by *Zeno* the Emperor to expell *Odoarer*. 7. By *Gundebald* King of

In what manner to compute the Numbers of Things, feem impoffible to be known.

10 Sybills.
Vide in Painting.

10 General Perfecutions.

Rome 10 times taken.

So the Ifle of *Corfica* was firft fubject to the *Tyrians*,
2. *Carthaginians*.
3. *Romans*.
4. *Sarazens*.
5. *Genoways*.
6. *Pifans*, and
7. *Genoways* again.

the *Burgundians*, who having ranfacked all *Italy* returned Home leaving the *Goths* in Possession. 8. By the *Moors* and *Saracens* followers of *Mahomet's* Law. 9. By *Henry IV.* Emperor of *Germany*. 10. By *Charles* Duke of *Bourbon*, Anno 1528.

Of the Number
11.

The Number 11 deserves some Consideration, since being Multiplied by 2, 4, 5, 6, 7, 8, it will end and begin with like Numbers. For Example, 11 Multiplied by 2 makes 22, by 4 makes 44, and 11 Multiplied by 8 makes 88.

Myſteries in other
Numbers.

The Numbers 220 and 284 being unequal, notwithstanding the Parts of the one Number do always equalize the other Number: So the aliquot Parts of 220 are 110, 54, 44, 22, 20, 11, 10, 5, 4, 2, 1, which together make 284. The aliquot Parts of 284 are 142, 71, 4, 2, 1, which together makes 220; this is very difficult to find in other Numbers. Likewise 5 Multiplied by 5 makes 25; 4 in 4 makes 16; and 3 in 3 makes 9, but 9 and 16 is equal to 25. Or if 3, 4, 5, be doubled, viz. 6, 8, 10, the Square of 10 is equal to the Square of 8 and 6, viz. 10 times 10 makes 100, and 8 times 8 makes 64, and 6 times 6 is 36, which 36 and 64 make 100, and so may this be Tripled, Quadrupled, &c.

The Ancients reckon'd Numerically by the Fingers of either Hand.

Having thus spoke of the Myſteries and Elements of Figures, we will now proceed to give a brief touch upon the Four Fundamental Rules of *Arithmetick*, which can never be so common as it is necessary, and therefore tho' we intended in others to speak of the more improv'd Parts and Excellencies of the Science, yet here because this is Ground and Foundation of most of the rest, and highly useful to all the Trading Part of the Nation, we therefore hope it may not be

be thought an Undervaluement to the Nature of this Work to speak of

The Fundamental Rules of Arithmetick.

The Introduction to this Science is *Numeration*, which learns us the Place of each Figure with the Value, as 1, 2, 3, 4, 5, 6, 7, 8, 9, and 0 called a Cypher, which indeed signifies nothing without there be One or more Figures behind it, then it increases the Value, as 10 is Ten, 100 is One Hundred, 1000 One Thousand, 10000 Ten Thousand, &c. which is easily known, if we remember that any Figure in the First Place signifies only its own single Value: In the Second Place, as many Ten's as its own simple Value: In the Third Place so many Hundreds; in the Fourth so many Thousands; in the Fifth so many Ten Thousands; in the Sixth so many Hundred Thousands; in the Seventh so many Millions; in the Eighth so many Ten Millions; in the Ninth Place so many Hundred Millions, &c. Examples whereof let those ignorant therein take thus, 146879626, which is One Hundred Forty Six Millions, Eight Hundred Seventy Nine Thousand, Six Hundred and Twenty Six.

Numeration.

ADDITION is the First Fundamental Rule of *Arithmetick*, and teacheth us how to cast several Sums into One, as the following Examples may shew;

Addition.

A owes to me	125	:	00	:	00
B owes me	500	:	00	:	00
C owes me	375	:	10	:	00

1000 : 10 : 00

I owe

	<i>l.</i>	<i>s.</i>	<i>d.</i>
I owe to <i>A</i>	95	10	06
I owe to <i>B</i>	700	00	00
I owe to <i>C</i>	212	09	09
	1008	00	03

Now to know how much is owing to me by the First Example, we begin at the first Row, that hath any Figures, which here is that under the Mark for Shillings, where I find 10 Shillings and no more, therefore I set that down and come to the next Column, and say 5 and 5 is 10, wherefore I set down a 0, and carry 1 in Memory to the next Row, and say 1 and 7 is 8 and 2 is 10, wherefore setting down another Cypher, I carry 1 in Memory to the next Row, and say 1 and 3 is 4 and 5 is 9, and 1 makes 10, which 10 I set down and find it to be just One Thousand Pounds and Ten Shillings owing to me by *A*, *B*, and *C*. Now for the Second Example, I go to the Row of Pence and find 9, and looking upwards see 6, 9 and 6 is 1 Shilling and 3 Pence, wherefore set down 3 and carry 1 to the Place of Shillings, saying 1 and 9 is 10, and 10 is 20, which being just One Pound I set down 00 there, and carry 1 in Memory to the Row of Pounds, saying 1 and 2 is 3 and 5 is 8, which I set down, and then go the next and say 1 and 9 is 10, wherefore as before I set down a Cypher and carry 1 in Mind to the next, saying 1 which I carry and 2 is 3 and 7 is 10, which setting down I find I owe in the World One Thousand and Eight Pounds and Three Pence. Now to know how much I owe in the World, more than my Debts to me are sufficient to pay, is the Business of the Second Rule called

SUB-

SUBTRACTION, which teacheth us Subtraction.
how to take a less Sum out of a greater so as
to know what remains; as for Example, I
found before that

$$\begin{array}{r}
 \text{I owe } 1008 : 00 : 03 \text{ and have} \\
 \text{Owing to me } 1000 : 10 : 00 \\
 \hline
 0007 : 10 : 03
 \end{array}$$

To know what remains for me to make good out of my ready Money and Stock, say, Nothing from 3 and there remains 3, which I set down, then going to the next, I say 10 Shillings from Nothing I cannot have, but 10 Shillings from 20 Shillings (which is 1 Pound I borrow in Mind from the 8 above in the Column of Pounds) there remains 10 Shillings, which set down and then say 1 which I borrowed, and 0 is but 1 still, that 1 out of 8 and there remains 7, which I set down; and then going to the next Row and find Nothing from Nothing Twice, and then 1 from 1 and there remains Nothing, so that I find I must pay Seven Pounds Ten Shillings and Three Pence, with the One Thousand Pounds and Ten Shillings owing to me e're I can be clear with the World.

We can prove our *Subtraction* by *Addition*, for adding the Remainder and lower Sum together, if it be done right, we shall find those Two agree with the upper Sum.

MULTIPLICATION is the Third Rule Multiplication.
of Arithmetick, and serves instead of many Additions. It consists of Three Parts, *Multiplicand*, *Multiplier*, and *Product*; as when I say, 6 times 8 is 48; 8 is the *Multiplicand*, 6 the *Multiplier*, and 48 the *Product*. The best
Order

Order that can be taken for making a Progress in this Rule, is to have in perfect Memory the following

T A B L E.

1	2	3	4	5	6	7	8	9
2	4	6	8	10	12	14	16	18
3	6	9	12	15	18	21	24	27
4	8	12	16	20	24	28	32	36
5	10	15	20	25	30	35	40	45
6	12	18	24	30	36	42	48	54
7	14	21	28	35	42	49	56	63
8	16	24	32	40	48	56	64	72
9	18	27	36	45	54	64	72	81

If we are at a loss in our Number, 'tis often of great ease to the Memory to Invert it, as of 10 times 4, to say 4 times 10, that's 40; 6 times 8, is 8 times 6, that is 48, &c.

For an *Example of Multiplication*, take this; It is demanded how many Shillings there are in 6978 Pounds, multiply the given Number
of

of Pounds by 20 (the Number of Shillings in each Pound) thus,

$$\begin{array}{r} 6978 \\ 20 \\ \hline 139560 \end{array}$$

The first of the 20 being a Cypher set down 0 underneath the first Figure, then proceed to the next Figure, and say, 2 times 8 is 16; set down 6 under the second Figure and carry 1; then 2 times 7 is 14, and 1 that I carried makes 15, set down 5 and carry 1; then 2 times 9 is 18, and 1 I carried makes 19, set down 9 and carry 1; lastly, 2 times 6 is 12, and 1 I carried is 13, which set down, and we find that 6978 *l.* multiplied by 20, makes 139560 Shillings. We may prove the *Multiplication* by the following Rule of

DIVISION, which Teaches us to find how many times a lesser Number is contained in a greater, when the lesser hath been taken out of it, as often as it can.

Division

There are Four Parts or Numbers to be observed, 1. The Dividend. 2. The Divisor; this must always be lesser than the Dividend. 3. The Quotient, or Sum produced. 4. If any thing happen to be left after such Division made, which must always be less than the Divisor, the same is called the Remainder.

For EXAMPLE.

To divide 8621 by 34, first say, how many times 3 in 8? the Answer will be 2 times, which place in the *Quotient*; saying, 2 times 4 is 8 from 16, and there remains 8, which
set

set down over the 6, as you see underneath,

<i>Divisor.</i>	<i>Dividend.</i>	<i>Quotient.</i>
24	8621	(253
	34	
	x (1	
	x 82 (9	
	862x (253	
	3444	
	33	

and carry 1, and say, 2 times 3 is 6, and 1 I carried is 7, from 8 and there remains 1, which set down over the 8, striking a small stroke thro' the Figures that are worked; but then still remains 1821 in the *Dividend*, therefore I must now set down my *Divisor* forwards, which is done thus,

x (1
x 82 (9
862x (253
3444
33

Here I enquire how often I can have 3 in 18, the Answer will be 6 times; but then I cannot have 6 times 4 out of 2, therefore I take but 5 times; and having set 5 in the Place for the *Quotient*, I say, 5 times 4 is 20, from 22, and there remains 2, and I carry 2, and 5 time 3 is 15, and 2 I carried is 17, from 18 and there remains 1; here I enquire how often I can have 3 in 12, the Answer will be 4 times; but then I cannot have 4 times 3 out of 11, therefore I take but 3 times, setting the *Quotient* down as before, I say, 3 times 4 is
12,

12, from 21, and there remains 9, and 3 times 3 is 9, and 2 I carried is 11, from 12, and there remains 1; and because 19 left is less than my *Divisor* 34, I can divide no further, but make a Crochet before the two Figures, to denote it a *Remainder*. If your Sums be long, take care to write your Figures even in their Places, over and under each other, else all will be brought into Confusion. It is said before, *Multiplication* may be proved by *Division*, as thus, Divide the *Product* by the *Multiplier*, and if the Work be right, the *Quotient* will be equal to the *Multiplicand*; or divide the *Product* by the *Multiplicand*, and *Quotient* shall be equal to the *Multiplier*; either way will do: So *Multiplication* is the surest Proof of *Division*, for if you multiply the *Quotient* by the *Divisor*, and add the *Remainder*, if any be left in the *Division*, if the whole *Product* were the same with your *Dividend*, then your Work is right, otherwise there is some Mistake. These two Rules are so plain, they need no *Examples*.

THE RULE OF THREE, so called, for that there is Three Numbers given, by which a Fourth is found in Proportion thereunto; and this is done by multiplying the Second and Third Numbers together, and dividing the *Product* by the First, and the *Quotient* of the said *Division* is the Answer to the Question.

The Rule of
Three.

EXAMPLE.

If 1 Pound of Sugar cost 6 Pence, what shall 112 Pounds cost?

Answer. 672 Pence, or 56 Shillings.

Here

Here the First Number being an Unit, which neither Multiplies nor Divides, it saves the Labour of Division, and the Answer is 672 Pence, (for the Answer will be of the same Name with the Second Number) which divided by 12, to bring them into Shillings, gives in the *Quotient* 56 Shillings, which is the Price of 112 Pound-Weight of Sugar.

Note, That in this Rule, the First and Third Numbers must be both of one Denomination, and the Second must be brought into the lowest Value expressed therein.

This is sufficient to keep the more common Parts of this Science in Memory; those who have arrived to greater Excellence, being supposed to be perfect Masters, need not more thereof.

Some strange Propositions in Arithmetick.

London might be bought at one Pin the first Week, still doubling each Week throughout the Year.

Many strange Propositions this Art doth afford, which will shew the Increase of Numbers by *Multiplication*; for if the City of *London* were to be sold after the manner of a Pin for the first Week, 2 the second Week, 4 the third Week, 8 the fourth Week, 16 the fifth Week, 32 the sixth Week, 64 the seventh Week, 128 the eighth Week, &c. still doubling it for one whole Year, it would amount to the Sum of Eighteen Thousand, Eight Hundred and Thirty Millions of Pounds Sterling, at allowing a Thousand Pins for a Penny; of which vast Quantity of Pins, if a Hundred Thousand were allowed to a Quarter, the whole would contain Ninety Eight Millions, Four Hundred Thousand Tuns, able to load Forty Five Thousand, Nine Hundred and Thirty Ships, of One Thousand Tuns apiece. Also the Great *Turk*, with all his Revenues, could not be able to maintain only for one Year's Time, all the Pigs that a Sow may
Pigg,

Pigg, with her Race, for, or unto Twelve Years Time; for supposing the Sow brings forth two Males and four Females, and each Female bring forth as many every Year, the Increase, at the end of Twelve Years, would be found above Three and Thirty Millions of Pigs; for which, allowing each Pig's Maintenance to cost a Crown only, to be kept for one Year, it would exceed the *Turk's* Revenue. Also a Hundred Sheep, each, and its Offspring, producing one every Year, for sixteen Years, would be found to multiply to above Six Millions, Five Hundred and Fifty Three Thousand Sheep. Also, suppose one Grain of Corn sown in the Ground brings forth fifty, (as it does often more) which fifty Grains sown the next Year, and still the Increase every Year, in Twelve Years Time, there would be found 244140625000000000000000 which were able to load almost all the Creatures in the World. So in Ringing of Bells, there may be these Numbers of Changes, which is found out by multiplying every Number from the Unit successively, in each other Product unto the Term assigned.

The Great *Turk's* Revenue not able to keep for one Year, the whole Race proceeds from one Sow for Twelve Years.

Increase of Sheep.

Increase of Corn

Changes on Bells.

On 1 Bell.	1 Change.	Example of Change on Six Bells.
2	2	
3	6	123
4	24	132
5	120	213
6	720	231
7	5040	312
8	40320	321

[*Egelric*, Successor to *Turketule*, Abbot of *Croyland*, about *Anno* 976. is Recorded to be the first who perfected a Harmonious Ring of Bells in *England*, which were at *Croyland* Abbey;

by ; for whereas his Predecessor *Turketule* had caused a Bell of a prodigious largeness to be made, which he named *Guthlac*, this *Egelric* added thereto two great ones, called *Bartholmew* and *Bertelin* ; and two mean ones, called *Turketule* and *Tolwin*, likewise two little ones, called *Pega* and *Bega* ; all which being framed of a proportionable Measure, made together a most delightful Harmony, not to be equalled in the whole Kingdom, saith *Cressy*, in his *Church-History of Britain*, Lib. 32. Cap. 26.]

Consorts in Voices.

And as on Bells, so on Musick, Ten Voices may have this Number of Consorts, (each Man keeping his own Note, but only altering his Place) viz. Three Millions Six Hundred Twenty Eight Thousand and Eight Hundred several Notes. The like of Stringed Instruments ; and the *Gamut* may be varied

Stringed Instruments.

From Twenty Four Letters, variety of Languages.

to the Number of 1124001075070399680000 Notes. From this Mutability of Transmutation, it is no Marvel, that by Twenty Four Letters there is made such variety of Languages, and infinite Numbers of Words in each Language, seeing the diversity of Syllables produceth that effect, and the interchanging of Letters amongst the Vowels, and themselves, maketh these Syllables ; which Alphabet of Twenty Four Letters may be varied Six Hundred Twenty Thousand Four Hundred Forty Eight Millions of Millions, Five Hundred Ninety Three Thousand Four Hundred Thirty Eight Millions of Millions, and more. Now if a Man could read One Hundred Thousand Words in an Hour, (a Task too great for any Man) and there were Four Thousand Six Hundred and Fifty Thousand Millions of Men, they could not speak these Words according to the hourly Proportion abovesaid, in Threescore

score and Ten Thousand Years. If a Man should go Twenty Miles every day, it would be Three Years wanting a Fortnight, before he could go once about the Earth; and if a Bird should fly round about it in two Days, the Motion would be Four Hundred and Fifty Miles an Hour. Admit it be supposed a Man could go Twenty Miles daily in ascending towards the Heavens, he would be above Fifteen Years before he should arrive at the Orb of the Moon. Also if a Mill-stone should descend from the Place of the Sun a Thousand Miles an Hour, which is above Fifteen Miles in a Minute, (far beyond the Proportion of Motion, as saith my Author) it would be above One Hundred Sixty and Three Days before it would fall down to the Earth. And the Sun in his proper Sphere (according to the *Ptolomean* System) must move more than Seven Thousand Five Hundred and Seventy Miles in one Minute of Time, which is more swift than any Bullet, Arrow, or Thunderbolt can move. Every idle Penny a Person spends would purchase more than a Yard square of good Land for ever; which may be thus demonstrated, 16 Foot and an half is one Rod, and 40 such Rods, that is, 660 Foot in length, and 4 such Rods, that is, 66 Foot in breadth, makes one Acre of Land. It follows, that multiplying 669 by 66, that every Acre contains 43560 square Feet. Now if Lands that are as good as most in *England*, are Let at 20 Shillings an Acre *per Ann.* and to be sold for 20 Years Purchase, *viz.* 20 Pounds, or 4800 Pence. If we but divide 43560 (the Number of square Feet in an Acre) by 488, the Quotient is 9, and 360 remaining; which makes it plain, that every single

Twenty Miles a Day, would take three Years to go round the Earth.

Twenty Miles a Day in Ascending, requires above Fifteen Years to reach the Moon.

A Mill-stone to fall a Thousand Miles an Hour, would take a Hundred Sixty Three Days before it came to the Earth, from the Sun.

To prove the Copernican System, see in Astronomy.

Every single Penny will purchase a Yard square of good Land for ever.

Penny purchases 9 square Feet, that is 3 Foot broad and 3 long (and somewhat more) of Land. Now it follows, that 2 Shillings purchases a Piece of Ground of 216 square Feet, 18 Foot long and 12 broad, which is enough to Build a pretty little House upon with a small Garden. To prove that no Person who hath any Trust or Dealings with the World, ought to be unskilled in this Science, which contains many Mysteries in Numbers. Supposing that a Person hath 20 Shillings given him on Condition to Pay to A. one Third Part of 20 Shillings, to B. one Fourth Part of 20 Shillings, to C. one Fifth Part, and to D. one Sixth Part.

The Third, the Fourth, Fifth, and Sixth Parts of 20 Shillings, not equal to the whole.

	s.	d.
Now A. demands for his Share one Third Part, viz.	6	8
B. demands for his Share one Fourth Part, viz.	5	0
C. demands for his Share one Fifth Part, viz.	4	0
D. demands for his Share one Sixth Part, viz.	3	4
	19	0

Here each is satisfied he hath his full Proportion, yet the Pay-Master thereby gets 1 Shilling to himself, for he paid but 19 Shillings, therefore they should have something more each of them; how much, the Science of *Algebra* will satisfy. For,

what.

ALGEBRA, or the Analytical Doctrine, is the Art of finding an unknown Magnitude, taking it as if it were known, and finding the

the Equality between it and the given Magnitudes. It implieth then a dissolving of what is supposed to be compounded, which is meant by the *Greek* word *αναλυσις*, or Resolution; on which account the Name may be given to the common Operations of Arithmetick; for *Division* is a Resolution of what is supposed to be made up by *Multiplication*, &c. but such Resolutions being easy, are not called *Algebra*; for the Resolution of Things, whereof the Composition is more intricate, is better understood by this Word. And this may suffice at present; but if any desire to Read more of this Science of *Arithmetick*, let him have Recourse to these

A U T H O R S,

Wingate's Arithmetick, *Claircomb's* Arithmetick, *French*; *Dela Port's* Arithmetick, *French*; *Hodder's* Arithmetick, *Leybourn's* Arithmetick, *Mellis's* Arithmetick, *Forcadell's* Arithmetick, *Baker's* Arithmetick, *Chamberlain's* Merchants Accomptant, *Cocker's* Decimal Arithmetick, *Pell's* Introduction to Algebra, *Peter Bongus's* *Mysticæ Numerorum Significationis Liber*, *Hylle's* Arithmetick, *John Ward's* Guide to the Mathematicks, *Lydal's* Arithmetick, *Kersey's* Algebra, *Wallis's* Algebra.

Of GEOMETRY.

Geometry, how
found out.

GEOMETRY hath properly the Name from Measuring the Earth, being first found out in *Egypt*; for when *Nilus* overflowing, confounded the Limits of their Fields, some of the more ingenious Inhabitants (Necessity compelling) found out the Rules of *Geometry*; by the Benefit whereof each Man after the fall of the Waters, had his own Portion of Ground allotted and laid out to him; so that from a few poor and weak Principles at the first, it grew to that height, that from Earth it reached to the Heavens, where it found out their Quantities, as also of the Elements, and the whole World besides. Out of *Egypt*, *Thales* brought it into *Greece*, where it received its chiefest Perfection.

Brought into
Greece.

The Subject of *Geometry*, is the Length, Breadth, and Heighth of all Things; in which Art are always used Demonstrations, without which the *Theorems* and *Propositions* are Incomprehensible. It is by some termed the *Crafty Man's Guide*, who without it, doth nothing commendable in the Eye of Judgment. It teacheth the Figures, Plains and Superficials, as the *Line Triangles*, *Quadrants*, *Oblique*, *Hollow*, somewhat long, called *Parallelograms*, *Oval*, *Lozenge-like*, the *Cube*, (a Quadrangular Square like a Dye) the *Dedochredon* (or Figure of Twelve Angles) *Cylinder*, the *Pyramid*, the *Round*, &c.

How Divided.

Geometry may be divided into these Three Subordinary Parts.

Altimetry, which is the Art of Measuring Strait Lines.

Planimetry,

Planimetry, which is the Art of Measuring of Surfaces. See *SURVEYING*.

Stereometry, which is the Art of Measuring *Solids* or *Bodies*.

A *Line* is measured by a *Line* of known Magnitude.

A *Superficies*, or *Surface*, by a *Square* of a known Magnitude.

Solids are measured by a *Cube* of a known Bulk.

The whole Art is entirely contained in the Fifteen Books of *Euclid's* Elements, which may be divided into Four Parts, *viz.* the First Part, contained in the First Six Books, Treats of *Planes*; the Second, consisting of the Three following Books, searcheth into the Properties of *Numbers*; the Third Part, consisting of the Tenth Book only, Treats of Commensurable and Incommensurable *Lines*; and the Fourth Part, comprehending the remaining Five Books, Treats of *Solids* or *Bodies*.

The Fifteen Books of *Euclid*, how they may be divided.

A *Point*, is an indivisible Sign in Magnitude.

A Point, what.

Magnitude, is either a *Line*, or something made of a *Line* or *Lines*.

Magnitude, what.

A *Line* is a Magnitude, consisting only of Length, without either Breadth or Thickness, and is either considered simply of it self (either Right or Oblique) or else comparatively with another.

A Line, what.

A *Periphery*, or *Circular Line*, is that which is equally distant from the middle, which middle is called the *Center*; and the distance between that *Center* and the *Circumference*, is called the *Radius*.

Periphery.

Center.

Radius.

Parallel Lines are such as are equally distant in all Places, whether lying Right or Circular.

Parallels.

An Angle.
Right,
Oblique.

An *Angle* is either Right or Oblique; the Right is that whose *Legs* or *Sides* are Perpendicular to one another, the Oblique is that whose *Sides* do incline to one another, upon one side more than another. And an Oblique Angle is either *Acute*, (*i. e.* Sharp) or *Obtuse*, *i. e.* Blunt.

Circle divided in-
to Degrees and
Minutes.

Every *Circle* is supposed to be divided into 360 equal Parts, called *Degrees*, and every *Degree* into 60 *Minutes*, and each *Minute* into 60 *Seconds*, &c. Some suppose every *Degree* to be divided into 10 Parts, and every one of those into 10 more, &c.

Semi-Circle.

A *Semi-Circle* is half the whole Circle, and contains 180 *Degrees*.

Right Line.

Diameter.

A *Right Line*, inscribed in a Circle, either passeth thro' the Center, as the *Diameter* and *Radius*, or is drawn beside the Center, as *Chords* and *Sines*.

Quadrant.

A *Quadrant* is the Fourth Part of a Circle, viz. 90 *Degrees*.

Figure.

A *Figure* is that which is every where Bounded, whether it be with one only Limit, as a *Circle*, or with more, as a *Triangle*, *Quadrangle*, *Pyramis*, *Cube*, &c.

Superficies.

A Figure terminated by *Lines*, is a *Superficies*; and that Figure which is bounded with several *Superficies*, is a *Body* or *Solid*.

Solid.

Triangle.

A *Triangle* is that which is comprehended by three *Right Lines*. It is distinguished from the *Sides*, or from the *Angles*. In respect of the *Sides*, a *Triangle* is, 1. The *Isopleuron Triangle*, which hath three equal *Sides*; 2. An *Isosceles*, which hath two equal *Sides*; and, 3. A *Scalenum*, whose three *Sides* are all unequal. In respect of the *Angles*, a *Triangle* is Right (which hath one *Right Line*) or Oblique, which is either *Acute* or *Obtuse*.

Isopleuron.

Isosceles.

Scalenum.

A Right Angled
Triangle.

An Oblique An-
gled Triangle.

A *Quadrangle* is a Plane comprehended by Four right Lines, and is either a *Parallelogram* or a *Trapezium*. A *Parallelogram* is a *Quadrangle* whose opposite Sides are Parallel or Equidistant, and it is either Right-Angled or Oblique. A *Trapezium* differs from the *Parallelogram*, but is a *Quadrangle*, and may be either Right Angled or Oblique.

Quadrangle.

Parallelogram.

Trapezium.

A Right Angled *Multangled Plane*, is that which is comprehended by more than Four Lines.

Multangled Plane.

A Multangled Right Lined Plane or *Polygon*, is either Ordinate and Regular, or Inordinate and Irregular.

Polygon.

Ordinate and *Regular Polygons*, are such as are contained by equal Sides and Angles, as a *Pentagon*, *Hexagon*, &c.

Regular Polygons.

Inordinate or *Irregular Polygons*, are such as are contained by unequal Sides and Angles.

Irregular Polygons.

Note, 1. The Sides of all Plane Triangles and other Plane Figures are to be measured by the Scale or Line of equal Parts. 2. The Angles may be measured by the Lines of Sines, Tangents or Secants, as well as by the Line of Chords. And now to proceed to the

DOCTRINE of BODIES.

Doctrin of Bodies.

A *Solid* or Body, is that which hath Length, Breadth and Thickness, whose Bounds and Limits are Superficies. A Solid is either Plane or Gibbous.

A Solid.

A *Plane Solid*, is that which is comprehended of Plane Superficies, and is either a *Pyramid*, or *Pyramidae*.

Plane Solid.

A *Pyramid*, is a solid Figure which is contained by Planes, set upon one Plane or Base and meeting in one Point.

Pyramid.

A

Pyramide.

A *Pyramide* is a solid Figure composed of *Pyramids*, and is either a *Prism* or a mix'd *Polyhedron*.

Prism.

A *Prism* is a *Pyramide* or solid Figure, by Planes, of which those Two which are opposite, are equal like and Parallel, and all the other Planes are *Parallelograms*. A *Prism* is either a *Pentahedron*, *Hexahedron*, or a *Polyhedron*.

Pentahedron
Prism.

A *Pentahedron Prism*, is that which is comprehended of Five Sides, and the Base a Triangle.

Hexahedron
Prism.

An *Hexahedron Prism*, is that which is comprehended of Six Sides, and the Base a *Quadrangle*, and is either a *Parallelopipedon* or a *Trapezium*. A *Parallelopipedon* is that whose Sides or opposite Planes are *Parallelograms*. A *Trapezium* is that solid whose opposite Planes or Sides are neither Parallel nor Equal.

Parallelopipedon.

Polyhedron Prism.

A *Polyhedron*, is that which is comprehended of more than Five Sides, and the Base a Multangle.

Octahedron.

An *Octahedron* is a solid Figure, which is contained by Eight Equal and Equilateral Triangles.

Icosahedron.

A *Icosahedron*, is a solid Figure, which is contained by Twenty Equal and Equilateral Triangles.

Dodecahedron.

A *Dodecahedron*, is a solid Figure, which is contained by Twelve *Pentagons* Equilateral and Equiangled.

Cube.

A *Cube* is in Figure like a Six Square Dye.

Gibbous Solid.

A *Gibbous Solid*, is that which is comprehended of Gibbous Superficies, and it is either a Sphere or Various. A *Sphere* is a Gibbous Body absolutely Round and Globular. A various Gibbous Body is that which is comprehended by various Superficies and a Circular Base, and is either a *Cone* or a *Cylinder*.

Sphere.

A *Cone* is a Pyramidical Body whose Base is a Circle.

Cone.

A *Cylinder* is a solid Body of equal Thickness, having a Circle for its Base. The solid Content of these Bodies may be measured by the following

Cylinder.

P R O B L E M S.

1. The Base and Altitude of a *Pyramid* or *Cone* given to find the solid Content.

Problem 1.

Multiply the Altitude by a Third Part of the Base, or the whole Base by a Third Part of the Altitude, the Product shall be the solid Content required.

2. The Base of a *Prism* or *Cylinder* being given, to find the solid Content.

Problem 2.

Multiply the Base of the *Prism* or *Cylinder* given by the Altitude, the Product shall be the solid Content.

3. In a Piece or Frustrum of a *Pyramid*, *Cone*, or other irregular Solid, both the Bases being given to find the Content.

Problem 3.

If the Aggregate of both the Bases of the *Frustrum*, and of the mean Proportional between them, be drawn into the Altitude of the *Frustrum*, the Third Part of the Product shall be equal to the solid Content required.

4. The Axis of a *Sphere* being given to find the solid Content.

Problem 4.

A *Sphere* (as *Archimedes* hath shewed) is equal to Two Thirds of a *Cylinder* circumscribing it; now then such a *Cylinder* being made, by the Area of a Circle multiplied by the Diameter, and therefore the Area of a Circle being multiplied by Two Thirds of the Diameter, the Product shall be the solid Content of a Sphere.

The Area of a Circle whose Diameter is 1 is 7853975, which being Multiplied by 666666, the

the Two Thirds of the Diameter, the Product 523598, is the solid Content of such a Sphere; therefore,

As 1 to 523598, so is the Cube of any Axis given, to the solid Content required.

By the noble Art of *Geometry* we have all manner of fine Architectures, as Temples, Domes, and other stately Edifices, our Navigating Ships and Gallies, also Bridges, Mills, Chariots, Coaches, Columns, Simple, Compound-ed and Serpentine, &c. Pendant Galleries, Aquaducts, Windows, Clocks, and all things whatsoever which have Artificial Motion, either by Air, Water (called the *Hydraulick Art*) Wind, Sinews or Cords; as all manner of Musical Instruments, Water-works, &c. And moreover, such is the infinite Subtlety and immense Depth of this admirable Art, that it dares contend even with Nature it self, in infusing Life, as it were, into the senseless Bodies of Wood, Stone, &c. as the Wooden Dove of *Archytas*, and many other rare Workmanships hereafter, collected will Evidence.

For Observations of the Geometrical Proportion and Symmetry of Human Bodies, see in the Treatise of *MAN KIND*.

For a Collection of the most admirable Theatres, Temples, Edifices, and other noble Pieces of Architecture, see at the End of our Treatise of *ARCHITECTURE*.

For many rare and accurate manual Performances, see the Treatise of *RARITIES* particularly the Artificial Rarities reposit-ed in that famous *Museum* of *Gresham College* in *London*. To all which take the following Addition of admirable Workmanships.

ARTIFICIAL RARITIES.

Anselmus de Boot tells us, That *Rudolphus* Table of Jewels, the Second King of *Bohemia*, had a Table of Jewels which he calls the Eighth Wonder of the World: It was wrought with such Art, that the Jewels which were set together with invisible Joints, presented a most pleasant Landskip, naturally representing Woods, Rivers, Flowers, Clouds, Animals, &c. the like not to be found in the World.

Simon Stevinus made Prince *Maurice* a Fly- Sailing Chariot, ing or Sailing Chariot, which in Two Hours Time would pass with Twenty Eight Persons from *Scheveling* to *Putten* (Towns in *Holland*) which is about Forty Two English Miles.

Johannes Regiomontanus made that famous Wooden Eagle, Wooden Eagle, (which by reason of Weights equally poised within the Body, and a certain Proportion of Air as the Spirit of Life inclosed) mounted up on high and flew to meet the Emperor *Maximilian* at *Nuremberg*, which meeting him in a Flight of half a Mile, turn'd back of its own accord and flew Home before him. He also made the Iron Fly that flew about a Table. Icon Fly.

Archytas made a Wooden Dove that flew, Wooden Dove, which *Julius Caesar Scaliger* accounteth no great piece of Art, saying, That he himself was able to make a Ship Swim and Steer her self by the same Means that *Archytas* made his Dove. That is, by taking the Pith of Rushes covered over with Bladders, or the thin Skins wherein Gold Beaters beat their Leaves, and wrapped about with little Strings of Sinews, where when a Semicircle shall set one Wheel on going, it moving

ing others, the Wings shall stir and cause that Motion.

Wooden Image. *Albertus Magnus* made a Wooden Image (which had been the Work of Thirty Years) that uttered Words and sounded a Trumpet.

Image of Plaister. *Greniborgus* made an Image of Plaister, which with infusing a Voice into it, as the distances of Breath would permit, he then stop'd up, and after divers Windings and Turnings came to the Head and Face of the Statue, and forasmuch as the force of the Words were sharp, and there was a succession of Spirits, they did expedietly move the Jaws and Tongue (made moveable for that purpose) and it dexterously uttered variety of Syllables.

Head of Earth. In the Reign of our King *Richard II.* A. D. 1387, a Head of Earth was made at *Oxford*, that at a Time appointed spoke these Words, *Caput dedecetur*, The Head shall be cut off: *Caput elevabitur*, The Head shall be lifted up: *Pedes elevabuntur super Caput*, The Feet shall be lifted up above the Head.

Silver Heaven. There was a Silver Heaven or Sphere sent by the Emperor *Ferdinand* to *Solyman* the great *Turk*, wherein the Motions kept all their Courses true with those of the Heavens. It was carried by Twelve Men before *Solyman*, and taken to Pieces in his Presence, and was reframed again immediately by the Maker. *Sapor* King of *Persia* had another of Glass, wherein he sat like *Jupiter* and saw the Sun, Moon and Stars, &c. Rise and Set around him, and changing and keeping its Course continually, the Moon being every Month New and Full as in the Heavens.

A perpetual Lamp. At the Dissolution of Monasteries here in *England*, a Lamp was found had then burnt in a Tomb from about Three Hundred Years after

ter Christ. The ancient Romans used to preserve Lights in their Sepulchers many Ages, by the Oilyness of Gold resolved by Art into a liquid Substance.

Calicrates made Pismires of Ivory, the Legs whereof were not to be seen without Spectacles. Ivory Pismires.

Mark Scalot a Blacksmith made a Lock of Eleven Pieces (Iron, Steel and Brass) which altogether weighed but One Grain in Gold. Lock weighed a Grain.

Myrmecides made an Ivory Chariot with Four Wheels and Four Horses, all which were covered with One living Fly with her Wings spread. He also made a Ship with all her Tackling, which was covered by a Bee so as not to be seen. Ivory Chariot; A Ship.

Cornelius Van Drebbel made an Organ so curious, that placing it in the open Air, where the Sun Beams could play upon it (for otherwise it would not do) made a rare Symphony of it self. An Organ.

Clavius, by the force of a Concave in the Earth, did Impress, Paint, or Represent in the Air, the Name of *Alexander Farnesius*, (who was present to behold it) in radiant shining Letters. Letters impressed on the Air.

Linus, an Englishman, but a Jesuite at *Liege*, carried in his Pocket a Phyal of Water, wherein a Globe floated, on which Globe was the Twenty Four Letters, and upon the Inside of the Phyal was an *Index* or Stile that pointed out the Hour of the Day upon the Letters. A Pocket Water Dial. See hereafter.

Fanellus Turrianus, a Master in the Mathematicks, sent one Day several Wooden Sparrows flying in to the Emperor *Charles V.* then in his Dining-Room, and made little Armed Men Muster themselves, and move with Discipline upon a Table. Wooden Sparrows.

Malleable Glas.

An Artificer in *Rome* made some Glas Vessels and Phials of so tenacious a Temper, that throwing them to the Ground they would not break, but only bruise themselves, which the Author with a Hammer smoothed and straitened again, before the Emperor *Tiberius*; but the Emperor instead of Rewarding him, Beheaded the Author, fearing Gold and Silver would by that means grow less valuable.

A Sawing Mill.

In *Anno* 1610, Six Glasses of such malleable Glas as would not break, were sent from the Sophy of *Persia* to the King of *Spain*.

A Coining Engine.

Mr. *Morrison*, an Englishman, then at *Dantzick* in *Prussia*, sent a Mill, which would not only saw Boards, but take the Boards into the Saw without the help of Hands.

At the Mint of *Segovia* in *Spain*, is an Engine made to move by Water, that first distends Ingots of Gold into Bezants, then turns it to be stamp'd in another, from whence it is delivered to another that cuts it into its due Shape and Weight, and then lastly falls into a Room made for its Reception, all without the help of one single Hand.

1600 Dishes in a Cup made of a Pepper-corn.

Oswaldus Norghingerus made Sixteen Hundred Dishes of Ivory, so small, they were all included in a Cup turned out of a Pepper-corn, and shewed to Pope *Paul V.* See Turned Work, in *Gresham College RARITIES*.

25 Cannons, &c. in a Pepper-corn.

Johannes Baptista Terrarius, a Jesuit, shewed Twenty Five Cannons of Wood with their Carriages, Wheels, &c. which with Thirty Cups were contained in a Pepper-corn.

Homer's Iliads in a Nut.

Cicero tells us, he saw the Iliads of *Homer* written so as to be inclosed within a Nut, tho' *Alexander* thought them worthy of a far better Case, the rich Cabinet of *Darius*.

Scaliger

Scaliger tells *Cardanus* of a Chain of several Links of Gold, which a Flea could easily skip and draw away with it: But as *Alexander* only gave a Fellow a Bushel of Peas for being so dexterous to stand a good way off, and throw a Pea every Time upon a Needles Point, as considering his Ingenuity therein would yield no Service to Man, so may it be said of this Chain.

Gold Chain for a Flea.

Hadrian Junius saw at *Mechlyn* in *Brabant*, a Cherry-stone cut in Form of a Basket, wherein were Fifteen Pair of Dice distinct, each with their Spots and Number, easily of a good Eye to be discerned.

Fifteen Pair of Dice in a Cherry-stone.

George Whitehead an English Man made a Ship all furnish'd out, which moved on a Table, the Rowers plying the Oars, a Woman the while playing on the Lute, and a Dog Whelp crying upon Deck.

A Ship.

Miron an excellent Statuary made a Mare of Brass so nearly approaching the Life, that the Horses ran upon her to Assail her.

A Mare.

Praxiteles made an Image of *Venus* so rare, that a Youth fell desperately in Love, or was rather besotted therewith.

Image of *Venus*.

Johannes à Porta in his *Catoptricks* mentions a Parabolical Section by which he framed an Instrument in that Form, it would speedily fire any Thing at an infinite distance, even some Miles, a Thing himself calls Terrible, and indeed was much beyond what *Proclus* and *Archimedes* made for the Safety of their Country.

A burning Instrument.

Proclus in the Reign of *Anastasius Dicorus* made burning Glasses that burnt at a great distance the Ships of the *Mysians* and *Thracians* that then had block'd up *Constantinople*.

Burning Glasses.

Keneth King of *Scotland* had slain the Son and Kinsmen of *Fenella*; she to be revenged on

The Murdering Image.

the Murtherer, caused a *Statue* to be framed with admirable Art, having a Golden Apple fet with Precious Stones, which whosoever touched was immediately slain by many Darts the *Statue* would throw or Shoot with great fierceness. She, after the Image was set up, invited *Keneth* to see it, and take the Apple it offered as a rich present: He had no sooner touched it, but he was slain and *Fenella* fled into *Ireland*. See the *Scotch Chronicles*.

A pretty Artifice.

Claudius Gallus made a little Wood of Trees, which by *Hydraulick Art* and secret Conveyances of Water (thro' the Trunks and Branches) made the little Birds (of which there were the representation of several Sorts) to Sing and clap their Wings, but at the suddain Appearance of an Owl (by the same Artifice) out of a Bush, they all became mute. It stood at *Tivoli* on *Tyber* near *Rome*, in the Gardens of *Hippolitus d'Este*, Cardinal of *Ferrara*.

An admirable Clock.

See in the Treatise of Dyalling.

Copernicus made a Clock which had all the Signs of the *Zodiack*, and every Hour shewed some Mystery of the Christian Faith; also the Eclipses, Separation of the Elements, Creation of Light, Seasons of the Year, Moon's Wane and Full; the Distinction of Days, Months, Years, and so many Things, that to insist upon the Particulars, were the Work of an Age, saith *Fortescue*, *Ferix Academ.* p. 58, 59, 60.

Another.

Gasper Bartholinus made a Clock which shewed not only the Day, Hour and Minute, but also the remarkable Motions of the *Cœlestial Bodies*, with all Festivals both Fixed and Moveable, and several other pleasant Curiosities. It stands in the Cathedral Church of *St. Lawrence* in *Lunden* in the Kingdom of *Sweden*.

There

There is also another Publick Clock, of admirable Workmanship in the Cathedral Church of *Upsal* in *Sweden*.

Another.

At *Heidelberg* in *Germany* on the Town-House, is a Clock, which every Time it strikes, an Old Man puts off his Hat, a Cock Crows, and shakes his Wings, Soldiers Fight, &c.

Also another.

There was a *German* Clock brought to *Legborn* which had an infinite Number of strange Motions of Companies of Shepherds Dancing, Playing on the Bagpipes, with curious Motion of the Fingers, while others Turned, some Danc'd, some Leaped, &c.

Likewise another

At *Dantzick* was set up an Invention for weaving Four or Five Webs at a Time without any help. The Engine moved of it self Night and Day, but it was suppressed for fear of ruining the Poor Weavers, and the Inventor made away privately.

A Weaving Engine.

Of no small Fame was the Portable Palace made of Wood, which our King *Henry VIII.* carried into *France* to that famous Entertainment and Interview he had with *Francis I.* It was a curious Thing, and the Model of late Years to be seen in the Tower of *London*.

Portable Palace.

An ingenious Invention was the *Æolii Sclope*, or Wind Muskets, which would shoot Bullets with Wind and Air as forcibly as with Powder. As also is Mr. *Boyle's* Pneumatick Engine or Air Pump. See more in our Treatise of INVENTIONS.

Æolii Sclope.

In Queen *Elizabeth's* Time one writ the Ten Commandments, Pater Noster, the Creed, the Queen's Name, and the Year of our Lord in the compass of a Penny, and presented such a Pair of Spectacles as the Queen might see every Letter distinctly.

A Manuscript Performance.

Negotiating Image.

Historians assure us, that an Iron *Statue* was made, which after many Turnings and Windings presented it self to the Emperor of *Morocco*, to whom it kneeled down and delivered a Petition, and then rising again returned the same Way it came.

Wooden Venus.

Dædalus made a Wooden *Venus* which by the Power of Quicksilver walked, rowled her Eyes and looked as if living.

Adoring Statue.

In *India* was a *Statue* made and set upon a Mountain, that kneeled and adored the rising Sun every Morning.

The Art of Communication.

Pythagoras (we read) could write what he pleased on a Glass, and by the Reflexion of the same Species, would make those Letters appear on the Circle of the Moon so plain as to be read by any Person some Miles distant from him. *Agrippa* affirms it possible, and not unknown to himself and others; and a Bishop of *England* did perform by the like means those strange Conclusions which he professes in his *Nunciis inanimatus*, where he says, That he could inform his Friends of what he pleased, tho' they should be One Hundred Miles distant, *forte etiam, vel milliare millesimum*, they are his own Words, and perhaps a Thousand, and all this in a Minutes Space or a little more, quicker than the Sun could move almost. Another way have I read of, viz. That by the help of the Magnet, Persons which are at great distance may know each others Mind, as if one at *London* and the other at *Vienna*, if each of them have a Circular Alphabet (like a Clock Dial-plate) and a Needle touched with one Magnet, then the Virtue would be such, that in the same Time that the Needle at *London* was moved, that at *Vienna* should move also: Provided the Parties have like secret Notes for division of Words, and the

the Observation be made at a set Hour of the Day or Night; and when the one Party would declare any Thing unto the other; then let the Party move the Needle to those Letters as would form the Words whereby to open his Intention, and the other would move also, and may return his Mind again by the like Means.

Pliny assures us *Lib. 26. cap. 8.* That the Emperor *Augustus* having accommodated an Obelisk One Hundred and Six Foot high at *Rome*, he made about it a Pavement; and by the Industry of *Manilius* the Mathematician there were enchaſed Marks of Copper upon the Pavement (the Top of the Obelisk having a Golden Apple ſet thereon) to know the Hour, and the Courſe of the Sun, with the Increate and Decrease of Days by the ſame Shadow.

A Dial about an Obeliſk.

Ptolemy writes, as *Cardanus* Reports, that there were Glaſſes which ſerved for Dials, and preſented the Face of the Beholders as many Times as the Number of Hours were. But this was thought to be done by the help of Water and not by Glaſſes, which did leak by little and little out of the Veſſel, diſcovering firſt One Glaſs, then Two Glaſſes, &c. to ſhew ſo many Faces as there were Hours, which was only by the leaking of Water.

Water Dials,

The *Almains* make Dials upon the Wainſcot or Seeling of a Chamber (where the Sun can never Shine, or the Beams of the Sun cannot directly ſtrike) by placing of a little Glaſs in the place of the Style, which reflecteth the Light with the ſame Condition that the Shadow of the Stile ſheweth the Hour.

Sun Dials within the Houſe.

Near to ancient *Syracuse* in *Sicily*, are ſome Subterranean Cavities, where *Dionysius* the Tyrant ſhut up his Slaves. Over theſe was his Palace, and being deſirous to over hear all was

The Hearing Cave

spoke amongst his Slaves, there was a Communication cut (between the Cavities and his Palace out of a firm Rock, resembling the interior Frame of a Man's Ear, which makes such a curious Echo, that the smallest Word that is but whisper'd is clearly heard; It is still to be seen.

Carved Rocks.

In the Isle *Salsete* in *India* are vast Receptacles cut out of the main Rock one above another, some of them being equal in Bigness to a Village of Four Hundred Houses, and adorn'd throughout with strange Statues of Idols representing Elephants, Tigers, Lions, Amazons, &c.

In the Isle *Comorein* near *Bombay*, is a City of the same Name, having divers large Heathen Temples, and many other Apartments, all cut out of the firm Rock, which stupendious Work is attributed by some to *Alexander* the Great. See the Magnificent Buildings in our Treatise of ARCHITECTURE. See in INVENTIONS. See Artificial Rarities in the Catalogue of RARITIES in *Gresham College*.

Of the Science of *Geometry* have writ these,

AUTHORS,

Hero Mechanicus, *Fournier*, *De Chales*, *Malaper-tus*, *Maginus*, *Clavius*, *Nicolaus Tartalea* in *Italian*, *Adrianus Metius*, *Samuel Marolois*, *Simon Stevin*, *Daniel Sant Bech*. See also, *Euclid's Elements*, *Tacquet's Geometry*, *Baulier's Geometry*, *Orontius, Billetier*, *Lamy's Elements de Geometry*, *French, Geometry Praticque*, *French, Blundevill's Exercises*, *Cardan's Work of Proportions*, *Dr. Barrow*.

Now Living are, *Sir Isaac Newton*, *Sir Christopher Wren*, *Dr. Harris*, &c.

Of ARCHITECTURE.

ARCHITECTURE is the Art of Building well, and taken in the largest Sense, comprehends all kinds of Buildings whatsoever, tho' there are more, especially Three sorts, which differing in their Application, Design, and Purpose, are yet of near Relation in some respects to each other; thus, Civil Architecture comprehends the Art and Skill of Building Dwelling-Houses, Churches, Publick Edifices, Temples, &c. Naval Architecture intends the Building of Ships and Vessels for War and Commerce; and Military Architecture, is the Art of Fortification.

Architecture is by some stiled the Queen of Arts, and having been first derived to us from the *Greeks*, it is not without some just Reason Architects retain the Terms they gave to each particular Member and Ornament belonging to the several Orders.

The Ancient *Greek* and *Roman* Architecture would doubtless still have subsisted and made good what is Recorded of them, had not the *Goths*, *Vandals*, and other barbarous Nations, by their Irruption into the Civiliz'd World, Demolish'd them, Introducing in their stead a certain Fantastical and Licentious manner of Building, since called Modern, or *Gothick* rather, being heavy, dark Piles, full of Fret and Imagry, such as *Henry VII.*'s Chappel at *Westminster*, which abound with Incongruities, and so dissipate and break the Angles of the Sight, as it confounds it, taking off from that Noble Air and Grandure, the Bold and Graceful manner which the Ancients had Established,

for more Satisfaction of which see the Magnificent Buildings of the Ancients, Inserted in this Treatise.

The Five Orders
of Architecture.

The ORDERS being no other than the Elements of Architecture are Three, deduced from the *Greeks*, and which comprehend all the Species of Building; they are the *Dorick*, *Ionick*, and *Corinthian* Orders; to these hath been added Two other Orders by the *Latins*, stiled the *Tuscan* and the *Composite*; which Two last are by *Evelyn* and others esteemed Foreigners indeed, in respect to the Three first, which contain all that is Excellent, or Necessary for Architecture, there being but Three manners of Building, the *Solid*, the *Mean*, and *Delicate*, all accurately expressed in the Three Orders first named, which are but ill treated by the Workmen of this Age, who are fantastically designing Things of their own Head in some particular *Member* or *Cornice*, that it may obtain the Name of a New Order; whilst others again are so extreamly Nice and strict, that they Quarrel about the Minuter Portions of a Pillar, or other Piece of Architecture, as the *Guttæ* under a *Tryglyph*, too broad by $\frac{17}{8}$ parts of a Part; whereas the Beauty of all Buildings consists not simply in the so Minute Separation of every Member apart, but does rather principally result from the Symmetry and Oeconomy of the whole.

Of the Dorick
Order.

The Column, with its Base and Chapter, crowned with an Architrave, Frize, and Cornice, forms that kind of Building called an Order, the First of which is the DORICK, having been the first Manner of Temples and Palaces, and thought more Ancient than the Time of *Dorus*, Prince of *Achaia*, who built a Magnificent Temple to the Goddess *Juno*, in
the

the famous City of *Argos*, which was the very first Model of this Order: After which, were other Imitations, as that dedicated to *Jupiter* in the City *Olympia*, therefore called *Olympicus*, and another to *Apollo* in *Delos*, and many other excellent Structures. This Order representing Solidity to us, is only to be employed in great Massy Buildings and Edifices, Ports of Cittadels, Fortresses of Towns, Outsides of Churches or Publick Places, and the like, where the Delicateness of the Ornament is neither Convenient nor Profitable, but discovering a certain Masculine and Natural Beauty, which the *French* call *La grand Maniere*. Now as touching the difference of Manieres, it may happen that in the same Quantity of Superficies, one shall seem Great and Magnificent, and the other Poor and Trifling; for if the Division of the Principal Members of the Orders, consist of few Parts, and be all great, and of a bold and ample Relievo and Swelling, the Eye beholds nothing little or mean, but the Imagination is more vigorously touch'd with it: For Example, in a *Cornice*, if the *Gola*, or *Cymatium* of the *Corona*; the *Coping*, the *Modillions*, or *Dentili*, make a noble show by their graceful Projectures, and that we see none of that ordinary Confusion which is the Result of those little Cavities, Quarter-rounds of the *Astragal*, &c. (which unprofitably take up Place, to the Prejudice of the Principal Members) this will appear Solemn and August, but the other Mean, by reason of the Multiplicity of smaller Ornaments. The Columns of the *Dorick* Order in the fairest Works of Antiquity were without Bases; as in the Theatre of *Marcellus* at *Rome*, that at *Vicenza*, and the Triumphal-Arch at *Verona*; tho' the Modern Architects

Architects cavil at it, forming one themselves after their own Invention. The *Entablature* of this Order is more Massy and Tall, because the Strength of the Column being greater, prepares him also for the greater Burthen. It has ordinarily One Fourth Part of the Column, whereas in the other he has very often but a Fifth, and sometimes less. The *Cornice* would not have any *Foliage*, or like Trimming; but if he hath *Modillions*, they should be Square and Plain. The *Freeze* has a regular Ornament, which are the *Triglyphs*, the *Compartment* whereof was heretofore very Cumber-some and Inconvenient; and all the Inconveniency consists in placing the *Triglyph* just over the middle of the Column which it encounters, and that the *Metops* (the Spaces betwixt the *Triglyphs*) be perfectly Square, which must be: That which renders the Execution difficult, proceeds from the Distribution of the *Intercolumniations*, which have their Distances regular and determined, which does not suit with those of the *Triglyphs*. See *Vitruvius*, Lib. 3. Cap. 2. The *Architrave* hath also its particular Grace in certain Pendent Drops under the *Triglyphs*, that seem as it were to be fastened to it, as if all of a Piece; the entire Body ought to appear Substantial, and not exceed one full Face, lest parting it in two, it appear Feeble; but especially if it be broke in three Faces, as in the other Orders they do, the Fault is remarkable. Take here an Example for the *Dorick* Order, by which one may find all the several Parts of its Members in particular, with their respective Measures, which by this Expedient may be found always within the regular Terms of its Extent, touching only some of the Principal, referring for
the

the rest to the *Designs*, where every thing is so clear and punctual, that having conceived the *Module* (here made use of throughout) to be the *Semi-Diameter* of the *Column* divided into 30 *Minutes*, and that you do continually begin to measure the *Projectures* of every *Profile* from the *Central Line* of the *Column* to have (in the mean time) with the *Proportion* of the *Members*, the right *Position* and just *Level* of the *Pillar*, all the rest admits no difficulty. For 30 *Minutes* making the *Semi-Diameter*, 60 must compose the whole *Diameter*, 45 *Three Quarters*, 40 *Two Thirds*, 20 *One Third*, 15 a *Quarter*, &c. The Measures of this *Design* by their *Minutes*, being more concise and easy than using the *Terms* of *Module*, *Diameter*, *Thirds*, *Quarters*, &c. which some using are forced often to mention *Fractions*, (as suppose one *Module* and 3 *Minutes*, half a *Module*, 2 *Minutes* and $\frac{1}{4}$ of a *Minute*) which hereby are avoided. Now this way premised throughout, let us proceed to an *Example* of the *Dorick Order*, of which that taken out of the *Theatre of Marcellus* agrees best with the *Proportions* of this *Order* taught by *Vitruvius*. The whole *Shaft* of the *Column* had in length 7 times its *Diameter*, which on the *Foot* of the *Division* of the half *Diameter* in 30 *Minutes* (taking by the *Rule* aforesaid the *Semi-Diameter* of the *Column* for the *Module* of the *Orders*) makes 420 *Minutes*, which is *Fourteen Modules*. The height of the *Chapter* contain'd 30 *Minutes*, (or One *Module*) as did likewise the *Architrave*. The *Freeze*, with its *Fillet*, (*i. e.* the flat thin *List* which separates it from the *Cornice*) has 1 *Module* and $\frac{1}{4}$, or 37 *Minutes* and $\frac{1}{2}$. All these *Modules* computed together, or their *Minutes* cast

The *Module* as supposed here, Calculated for a standing *Rule* throughout.

A *Module*, what.

Freeze, what.

cast up, the Altitude of the *Entire Order* is 18 Modules $\frac{3}{4}$, or 562 Minutes and $\frac{1}{2}$; and the *Entablature* (i. e. the *Architrave*, *Freeze*, and *Cornice*) being always to continue one Quarter Part of the Column, must be 112 Minutes and $\frac{1}{2}$, or 3 Modules $\frac{3}{4}$, and so in Proportion, bigger or lesser in the *Cornice*; but in regard the *Freeze* and *Architrave* have always their precise Measure, the one has a Module, the other a Module and a half, without any Respect to the different height of the Columns. Now the *Cornice* being to supply what is deficient to arrive to the Fourth Part of the Column, its particular Proportion must depend on that of the Column; and the *Cornice* of one *Profile* can't serve for another, tho' of the same Order, unless the height of the Columns be equal, which Note well, for the general Proportion being once defectuous, 'tis vain to search for it in the Retail or Minuter Parts. Therefore take the whole height of the *Entablature* of the Design, and make a Multiplication conformable to the Proportion it ought to bear with its Column, having still regard to the Order it represents; for Example, One *Quarter*, as in this of the *Dorick*, the *Entablature* must be Multiply'd by Four; if it be a Fifth (as in some Examples of the *Corinthian*) it must be Multiply'd by Five, and so of the rest; for the Total of this Multiplication ought to give precisely the height of the Column, and where-ever this does not Quadrate, the *Profile* is Irregular. For the difference amongst Modern Architects and others, and for Examples of several *Profiles*, see *Evelyn's Parallel of Ancient Architecture with the Modern*, in a Collection of Ten Principal Authors, who have written up-
on

on the Five Orders, where you may find excellent Directions and Remarks, and Sculptures, with Lines and Figures explaining the Orders and Minuter Parts thereof at full.

The *Ionians* were the first Competitors with the *Dorians* in this Art, and considering that the Figure of a Man's Body on which the Dorick Order had been formed, was too Robust and Massie for Holy Places, chose a Model of a more Elegant Proportion, having regard more to the Beauty than Solidity thereof, wherefore it got the Name of the *Feminine Order*, and indeed the Order of the *Caryatides*, abusing this poor Sex, quickly sprung up after it; the Original of which last Order was, the People of *Carya* in *Peloponnesus* made a League with the *Persians* against their own Nation the *Greeks*; after the Defeat of the *Persians*, the Conquerors Besieg'd the City, burnt it, put every Man to the Sword, &c. and to Eternize their Resentment, erected publick Edifices, wherein they Engraved the Images of the Captives instead of Columns. The *Gothick* Order in imitation of the *Caryatides* compos'd lame Figur'd *Mutills* or *Corbels* instead of *Cartouzes*, sustained by Monkeys, &c. to be met with in the Corners of our Old Churches, which others disdain, placed since the Figures of Angels and Saints instead of the *Caryatides*, making them like Porters or Slaves to carry huge Cornices, &c.

Of this Order was the Temple of *Diana* Two Hundred Years Building, and of the *Dipterick* Figure, that is environ'd with a Twofold Range of Columns in Form of a double Portico. See hereafter amongst the Magnificent Buildings of the Ancients.

This

This *Ionick* Order is as it were in the middle of the Two Extrems, holding in a manner the Balance betwixt the *Dorick* Solidity and Gentleness of the *Corinthian*. As the *Dorick* Order hath the Grace of the *Triglyphs* on the *Cornice*; this Order hath *Dentilli* or Teeth, and the *Corinthian* her *Modillions*.

The entire Order of the *Ionick* Profile, taken from the Temple of *Fortuna Virilis* at Rome (at present the Church of St. Mary the Egyptian) contained from the Superficies of the *Area* to the *Cornice* 11 Diameters of the whole Column or 22 Modules—The Column with the Base and Chapter had 18 Modules; the *Entablature* (explain'd before) had 4 Modules lacking 4 Minutes: And his Height making Two Nines of the Column, produces a proportionate Mediocrity betwixt the *Dorick* Order (whereof the *Entablature* composes one Quarter) and the *Corinthian*, to which the Moderns ordinarily attribute the Fifth Part—The *Voluta* of the *Capital* is after an Oval Form producing a very noble Effect, tho' few Architects put it in Practice, because of the difficulty of turning it with a Grace by the Compass, which is demonstrated, and the Difficulty rendered very easie and practicable by the Directions of Mr. Evelyn in his Parallel of Architecture, Page 62. See also *Abrege des dix Livres de Architecture de Vitruve, en Explication de la Planche VIII.*

Of the *Corinthian*
Order.

The *Corinthian* Order was invented at *Corinth*, not long after (and having some Resemblance with) the *Ionick* Order, being very Rich and Sumptuous in its Ornaments, excelling all the other Orders, and only belongs to the most Judicious in this Art to put in Practice, for unless the Subject oblige it by Considerations very powerful, too much profuseness of Workmanship

manship among the Parts, offends the Eyes of the truly Knowing, and is only proper for most Magnificent Princes and their Palaces, Triumphal Arches, &c.

Villalpandus will needs have the *Capitel* of this Order to be taken by the *Corinthians* from the Temple of *Solomon*, of which God himself had been the Architect: But *Vitruvius* gives it another Original, viz. That a Virgin of *Corinth* Dying, her Nurse put into a Basket some Trifles which the Virgin had diverted her self with whilst Living, and set it on her Tomb, and lest the Weather should injure them, covered them with a Tile. This Basket being accidentally set upon the Root of an *Acanthus* or great Dock, began at the Spring of the Year to shoot forth Leaves, the Stalks whereof creeping up the Sides of the Basket, and meeting with the Edge of the Tile (jetting out beyond the Margin or Edge of the Basket) begun at length to bend their Tops downwards, forming a pretty kind of natural *Voluta*. It then happening that the Sculptor, *Callimachus* (it is not known under whose Reign he lived, but for the Delicateness of his Workmanship in Marble, &c. he was by the *Athenians* surnamed *Catatechnos* (i. e. Industrious) passing near this Monument, cast an Eye on the Basket, and the pretty Ornamental Foliage about it, which so pleased him, he made Columns at *Corinth* resembling this Model, and ordained its Symmetries: Which appeared very splendidly great in the *Rotonda* of *Italy*, which was of this Order, and one of the rarest Pieces of Antiquity: The whole Height of which Order contained 23 Modules and 2 Thirds, or 710 Minutes—The Base had 1 Module or 30 Minutes. The Shaft of the Column 15 Modules, and 2 Thirds wanting

ing 2 Minutes, or 468 Minutes. The Chapter 2 Modules and a Third, or 70 Minutes. The Entablature 4 Modules and 2 Thirds, 2 Minutes over, or 142 Minutes. The Perspective of several Examples of Ancient Portico of this Order. See *Evelyn's Parallel of Architecture*, and *Abrege de Architecture de Vitruve, en Explication de la Planche IX.*

Of the Tuscan Order.

The *Tuscan* Order is generally held to be a kind of Building, which differed from the others only in the Plainness of its Mouldings, and Solidity of its Parts, but in the rest consisting of the same Members, and of like Usage. And tho' *Vitruvius Lib. 4.* hath made a particular Chapter of the manner how to build Temples after the *Tuscan* Order, yet this Order is rejected by some as needless and superfluous; besides it would be very difficult to invent an handsome Idea of Entablature fit to place upon those Columns. And the only Piece of this Order which deserves to be put in Work, and can properly recommend it self to us, is the simple Column it self without any Architecture at all. Nor was this Order ever admitted but in Gross and Rustick Works, till the most Noble, and Time-enduring Column of *Trajan* was built, which yet preserves its Form and Beauty extant and entire at *Rome*, when all the rest of the stately Structures are almost totally Delapidated. The Prospect and Description of which see in *Evelyn's Parallel of Architecture*. It contained 17 Modules comprehending the Base and Capitel.

Of the Compound Order.

The *Compound* or *Composite* Order hath obtained the First Rank amongst the Moderns, tho' extreamly debased in the exact Review upon the Five Orders by Mr. *Evelyn*, who aims at having this Art establish'd on its genuine Principles;

Principles; and *Vitruvius*, the Father of Architecture, is altogether silent, as to this Order, whose very Name seems to infer a kind of Liberty; and that if it sometimes be permitted to take it, they may introduce into the Order, or retrench from it what they think fit, provided it be discreetly managed; as may be observed in the *Profile Composit* of the Castle of *Lyons*, at *Verona*, where the Author being to make an extraordinary large *Freeze* for the more commodious placing of many Figures, which concerned his Subjects, would spare from the *Cornice*, what he had usurped from the regular Proportion of the *Freeze*, therefore he cut off the *Corona*, tho' a considerable Member. The Column it self had Ten Diameters, and the Altitude of the *Entablature* a Fourth Part of the Column.

More Particulars of which, and the foregoing Orders, see at large (amongst other Authors named hereafter) in *Evelyn's* Parallel of Architecture, and the Abridgment of the Ten Books of Architecture of *Vitruvius*, in both which are Sculptures representing each Order; and in the latter, the Perspective View of a *Roman* Theatre, with Letters explaining each Part by its proper Name, as also the manner of Placing or Disposing and Cementing the Stones in the Building of the Walls of Temples, Castles, Edifices, &c.

*The most Famous and Magnificent Structures
of the Ancients and Moderns.*

Magnificent
Buildings.
Tower of Babel.

The Tower of Babel was a famous Building, built by Nimrod, 5146 Paces high, having an equal Basis; it had its Passage up round the side, and had many Corn Fields, Grass Fields, Cattle, and Rooms for People, Horses, Carts, &c. inclosed in it; yet it was not finished at the Confusion of Tongues.

The Labyrinth.

The Labyrinth, built on the Bank of Nile, by Psamneticus, King of Egypt; it had within the Compass of one continued Wall, 1000 (some say 3500) Houses, and 12 Palaces covered with Marble. This Building was most of it under Ground, and had infinite Windings and Turnings, yet had but one Way into it. The Stones were so laid, as no Wood or Cement was used; and at the opening of any Chamber-door, it gave a Report as loud and as long as Thunder.

City of Nineveh.

The City of Nineveh was built on a Compass of Ground, to the Number of 480 Furlongs; the Walls of it were 100 Foot high, and so broad three Carts might pass one another; and had on the Walls 1500 Towers, each Tower 200 Foot high from the Ground.

The Pyramids.

The Pyramids of Egypt are many in Number, but three of them are of chief Note; the Principal whereof stands South of the City of Memphis, and West of Nile. It is square at the bottom, and takes up 8 Acres of Ground, each square side being 300 Paces long; it has an Ascent (on the outside, being hollow within) of 225 Steps, each Step being 3 Foot high. The top, consisting but of three Stones, yet large

large enough to hold 60 Men standing, and is drawn into so narrow a Compass, in respect of the whole, that the ablest Archer cannot shoot beyond the Verge of the Foundation, or lowest Step. None of the Stones are little enough to be born or carried by our *English* Carriages, yet were they all brought notwithstanding (by some prodigious Carriages certainly) from the *Arabian* Mountains. This is one of the *Seven Wonders*, and was built by *Cheops*, an *Egyptian* King, who employed in it daily 366000 Men for 20 Years, and Prostituted his Daughter, exacting a Stone of every Man towards the Building of it. It stands there still, and is the Sepulchre of the *Egyptian* Kings. His Daughter built a Second, almost equal to the First, by the like Exaction.

The *Capitol* of *Rome*, seated on the *Tarpeian* Rock, contending with Heaven for Height, built by *Domitian*, who expended in the Building above 12 Thousand Talents, The outward covering was of Copper, but the *Capitol* was gilt both inside and outside, and the Doors overlaid with thick Plates of Gold, 'till *Honorius's* Time.

The *Capitol*.

The *House* of *Nero*, which *Nero* himself called *Domus Aurea*; it had in its Porch a Statue of *Nero* 120 Foot high, and in the House three Galleries, each Gallery a Mile long. There was within it, a standing Pool, like a Sea, beset with Buildings in Nature of a City; also Vineyards, Fields, Gardens, Grotto's, &c. and Multitudes of all Beasts; all things covered with Gold and Precious Stones. He had his Supping-Room roofed with Ivory Planks, made moveable, for casting down sweet Flowers, and had Pipes for sprinkling of Odorous Oyntments; the Roof of the

Nero's House. See Golden House of Arracan hereafter.

chief Supping-Room was round, which, like Heaven, perpetually wheeled about.

Wall of China.

The *Wall of China*, built by *Zaintzon*, was 400 Leagues long (with the Hills that here and there assisted the Work) the Wall was every where 6 Fathom high, and built so close, it was Death if a Nail could be run in between the Stones. It was 27 Years in Building, by 70050000 Men, and had several Turrets on the Walls, to defend themselves from the Invasions and Incursions of the *Tartars*.

Scaurus's Theatre.

The *Theatre* of *M. Scaurus* (Son-in-Law to *Sylla*) then *Ædile*; the Stage had three Heights one above another, wherein were 360 Columns; the middle Height of Columns all Glass, the other Marble. All the Boards and Planks were gilded. The Columns beneath were 38 Foot high, between which were placed about 3000 Statues. The Furniture was so extravagantly Rich, that when it was carried back (for this Theatre was but a Temporary Thing, scarce for a Month) to his Seat of Pleasure at *Tusculum*, the Slaves, mad at the Superfluity, fired the House, and burnt as much as came to 100 Millions of *Sesterces*.

C. Curio's Two Theatres.

The *Two Theatres* of *C. Curio*, were vastly big, holding most of the People of *Rome*; yet (what is marvellous) each Theatre hung but upon one Hook, and was ordered so, that to see the Stage-Plays in the Forenoon, they should hang back to back, and then in a Trice the Theatres were turned about (the People never shifting their Places, or stirring) against the Afternoon, when Sword-Players and Fencers were to fight, each Man being in his Rank and Order by the meeting of the Horns and Corners of it together, which then made one round Amphitheatre. A marvellous Work indeed

deed in the Framer, and as great a Folly in the People that fate there.

The *Amphitheatre*, begun by *Vespasian*, and finished by *Titus* the Son, was so high, the Eye of Man could hardly reach it, reared with Rivers of Treasure poured out. It contained upon the Steps only, easy Seats for 87000 Persons, so as the vacant Places besides would contain about 20000 more. It stood where sometime stood *Nero's* Fish-Ponds.

Vespasian's Amphitheatre.

The *Temple of Peace*, built by *Vespasian*, 300 Foot long and 200 broad; of which *Josephus* saith, That all the Rarities Men Travel thro' the World to see, are laid up there.

Temple of Peace.

The *Aquaduct* of *Tarquinius Priscus*, King of the *Romans*, cut thro' seven Hills, whereon stands *Rome* it self, making the City hang in the Air, and passed under by Boats; and which is admirable, that for all the vast rapid Stream takes all before it, and shakes the Pavement under them; and notwithstanding many Earthquakes, stands yet firm.

Priscus's Aquaduct.

The *Aquaduct*, begun by *Caligula*, and finished by *Claudius*, who commanded the two Fountains, *Curtius* and *Ceruleus* (whose two Heads are 40 Miles distant) to be brought thither, and were carried with such a force, that they mounted up to the highest Hills in *Rome*, and served all that dwelt thereon. The Work cost 300 Millions of *Sesterces*, and was an admirable Work, if we consider the Way these Waters are brought, the convenient use of it every where, the Number of Arches built to convey them, the Mountains pierced thro', the Vallies raised and made Level for the Conveyance of the Water.

Caligula and Claudius, their Aquaduct.

Temple of Diana.

The *Temple of Diana*, at *Ephesus*, counted one of the *Seven Wonders* of the World; it was 200 Years in Building, being 425 Foot long, and 220 broad, and sustained with 127 Pillars of Marble 70 Foot high, whereof 27 were most curiously graven, and all the rest of the Marble polished. It was fired seven times, and lastly by *Herostatus* (the same Night *Alexander* the Great was Born) who set it on fire only to get his Name famous in History; and tho' his Name was forbid (on severe Penalties) to be mentioned, yet it is commemorated down, how this famous Temple was ruined by his infamous Action.

Mausoleum.

The *Mausoleum*, or Tomb of *Mausoleus*, built to the Honour of him, by his Wife *Artemides*, Queen of *Caria*; it was accounted one of the *World's Wonders*, being 25 Cubits high, and supported by 36 curious Pillars. It was raised by those Excellent Architects, *Scopas*, *Timotheus*, *Briares*, and *Leochares*, and gave occasion for calling the magnificent Sepulchres of great Princes, by the Name of *Mausolea*, as may be read in *Suetonius*, in the Life of *Augustus*, Chap. 166.

Rotonda.

The *Rotonda* in *Italy*, anciently called the *Pantheon*, because dedicated to all the Gods, is a great massy Vault, 140 Foot high, and as many broad; having a Hole open at the Top of above three Yards Diameter, and yet stands a firm and bold Piece of Architecture, notwithstanding it is unclosed at Top, and hath now for many Years had no Pillars to bear up its great Roof. There are now to be seen lying on the Ground, but without the Structure, 13 of its Columns, each of them (being all of one Piece) 53 Foot high and 6 Diameter. This Fabrick, *Pliny*, in his Time, placed

placed among the rarest Works then Ex-
tant.

The huge *Colossus* of the Sun at *Rhodes*, *Colossus of Rhodes.*
made by *Charles* of *Lindum*, and accounted
one of the *Seven Wonders*; it was 70 Cubits
high, all of Brass, each Finger being as big
as a Man; he was 12 Years in making of it,
and it stood so wide that Ships could pass un-
der it. It was afterwards overthrown by an
Earthquake, the Brass whereof loaded 900
Camels.

The *Bridge* of *Caligula* was no small piece *Caligula's Bridge.*
of Art and Workmanship, being built upon
Ships in a few Days, and was three Miles and
an half to go over. This he did in Emula-
tion of *Xerxes*, as is said.

The *Ship* built by *Ptolomeus Philopater*, was *Philopater's Ship.*
280 Cubits long, 52 in height from the Keel
to the upper Deck; it had 400 Banks for
Rowers, which were in Number 4000, and
the Decks could contain 3000 Soldiers, besides
the Mariners, which were no less than 400.

The *Ship*, or *Galleon* of King *Hiero*, called *The Syracusia.*
the *Syracusia*, described in *Athenæus*, was sure
an extraordinary Thing, famous for having
10 Stables for Horses, 8 Towers, besides Fish-
Ponds, Gardens, *Tricliniums*, and many fair
Rooms paved with Agate and Precious Stones,
and not less Famous for being the Work of
that great Architect, *Archimedes*.

The *Bucentaure*, wherein the Doge of *Ve-* *Bucentaure.*
nice yearly Espouses the *Adriatick* Sea, is a
curious Thing, and hath its Name from being
able to contain 200 Persons, which are always
of the best Rank in *Venice*, and must have a
respectful distance in its Seats.

Via Appia.

The *Via Appia*, so called because *Appius Claudius* built it at his own proper Cost during his Consulship; it is a Cawsey, in length five Days Journey (beginning at *Rome*, and running thro' *Naples* to *Brundusium*) and so broad that two Carts can pass one another. It is made all of great black Flint-stones, each one as big as two Men can carry; and hath continued firm this 1800 Years, being laid so close together, they look as if they grew to one another. The frequent passing of Horses, Mules, &c. over this *Appian-Way*, hath made it so smooth and shining, that when the Sun shines thereon, it glitters two Miles off like a Silver Highway.

Temple of St Sophia.

The *Turkish Mosque*, or *Temple* of *St. Sophia*, built in 17 Years by the Emperor *Justinian*, stands in *Constantinople*, and for the Beauty and Elegancy of the Building, is thought by some to exceed all the Fabricks of the World, yet it is not above 300 Foot long, and 200 broad; built of an Oval form, surrounded with Pillars of admirable Workmanship, adorn'd with spacious and beautiful Galleries, roofed all over with *Mosaick* Work, and the very Doors curiously wrought and plaited; one of which, by the superstitious People, is thought to have been made of the Planks of *Noah's Ark*. Of this Fabrick a *Greek Historian* thus delivers himself (as rendered into *English*) “ The most Splendid and
 “ August Temple of *St. Sophia*, is the Church
 “ of my God, a Terrestrial Paradise, which I
 “ believe the *Seraphims* themselves with Ad-
 “ miration admire; and if God vouchsafes to
 “ reside in Works, rendered as Polite as pos-
 “ sible by the Hands of Men, certainly he
 “ resides here or no where. This Church be-
 “ ing

“ing divinely built, the Ornament of the whole Earth most gloriously shines like another Sun, and Celestial Gyant, &c.” On the Pedestal in the midst of the Imperial Fountain before the Church, *Justinian* caused the Statue of *Solomon* to be erected, as gazing on it, and holding his Finger in his Mouth, as owning himself far exceeded by this Structure of the New *Jerusalem*. Yet however the Temple is adorned, it's but a Trifle compared in bigness with the Ancient Temple of *Jerusalem*, destroyed by *Titus Vespasian*.

The *Seraglio* joyneth to the *Turkish Mosque* Turk's Seraglio. afore said, and is divided from the rest of *Constantinople* by a lofty Wall three Miles in Circuit; it was built by *Justinus*, and hath by the *Ottomans* been much enlarged, containing three Courts one within another, very pleasing for Recreation; the Buildings indeed yielding to those of *France* and *Italy* for Contrivance, but far surpassing them for Cost and Curiousness.

The Chief *Mosque* in *Fez* (of which there are 700) is called *Carnven*, being a Mile and half in Compass, the Roof very large and high, and is 150 Yards long, and 80 broad; it hath 30 large Gates, and above 300 Cisterns to wash in. Carnven, a Mosque in Fez.

The *Amadorach*, a College in *Fez* is a most curious and delicate Building, and hath three Cloysters of admirable Beauty, supported with eight square Pillars of divers Colours; the Roof curiously carved, and the Arches all of *Mosaick* Work of Gold and Azure; the Gates of Brass finely wrought, and the Door of each private Chamber of Inlaid Work. The whole costing the Founder 380000 Crowns. Amadorach in Fez.

The

Escorial in Spain.

The *Escorial*, or *Monastery* of *St. Lawrence* in *Spain*, is seated about seven Miles North from *Madrid*; it was built by King *Philip II.* and is a most sumptuous Building; the Front whereof, towards the West, is adorned with three stately Gates, the middlemost whereof leads into a most magnificent Temple; that on the Right Hand opens into divers Offices belonging to the Monastery; that on the Left into Schools and Out-houses. At the four Corners are four Turrets, and towards the North the King's Palace. It contains in all 37 Courts and Cloysters, 11000 Windows, 800 Pillars, and hath a Library containing above 18000 Books. The Revenues of it is above 30000 Crowns *per Annum*; and it is grown into an Adage, that it is worth a Journey into *Spain* to see that alone and return.

*St. Peter's Church
at Rome.*

St. Peter's Church at *Rome*, is a most Noble Structure, to which you arise by an Ascent of 24 Marble Steps, all as long as the Frontispiece of the Church is wide; there are five Doors letting you into the Porch, each Door checked with vast round Pillars, 24 Foot in Compass, and 86 high. Over these Pillars runs the Architrave, and over that the Lodge, or great Belcony, where the Pope is Crowned, and gives his Benediction on *Easter-Day*. Over the Lodge is a row of Rails, on which stand 13 vast Statues of our Saviour and his Apostles cut in Stone. The Porch is 289 Foot long, 44 broad, and 133 Foot high. Against the five Doors of the Porch, stand the five Doors of the Church; one whereof called *Porta Sancta*, is only open in the Jubilee Year; the two principal Doors, called *Valvæ Sancti Petri*, are 13 Foot wide, and 45 high. The Church is built crosswise, in length 520 Foot, in breadth

breadth 385, excelling the length of the famous Temple of Antiquity, viz. Solomon's Temple, 60 Cubits long; Diana's Temple at *Ephesus*, 425 Foot long; and the great *Mosque* at *Fez*, 150 Cubits long. The Roof of the Church is Arched with great Squares, each Square adorned with a great gilt Rose, and born up by Pillars 105 Feet in Compass, and 40 distant from each other, over-crufted (or to be over-crufted) with white Marble on that side which looks towards the Body of the Church; on the other side, covered with a reddish Marble, beset with the Heads of the Primitive Martyred Popes, held up by two Angels, and with the Pidgeon of *Innocent X.* In the middle of the cross Building, is mounted the great *Cupola*, resting upon four great Pillars, from which it riseth into such a high Vault, it seems to run into the Heavens, and carrieth the Compass of 170 Paces. Under the *Cupola* is the high Altar: The inside of the *Cupola* is curiously painted with Pictures in *Mosaick* Work; and this *Cupola* is esteemed the boldest Piece of Architecture, perhaps, the World hath seen, and was built at the Cost of *Sixtus Quintus*; the four Pillars on which it resteth, are each 120 Feet in Compass, and capable of Stairs within them, and Sacristies for *Roman* Relicks above. Over the Altar (which stands upon the Tomb of *St. Peter*) are four stately Brass Serpentine Pillars, that bear up a Canopy fringed round, all of the same Metal; over the Corners of the Canopy, stand four great Angels of Brass, gilt; and in the midst is mounted high, having a fair Cross of the same Metal upon it. The *Pilastri*, or four Pillars of Brass, are each as thick as three Men, 50 Feet high from the Ground, and weigh

weigh each of them 25000 Pounds-weight. Before this Church is an Obelisk (a great square Stone, in shape like a Pyramid) erected on a Basis and Pedestal 26 Foot high; the Obelisk it self being 80 Foot high, consisting of one entire Stone, weighing 400 Tuns, which, perhaps, is the greatest Weight in one Bulk, raised by the Art of Man.

Tower at Copenhagen, the same of the Tower of Morocco.

The Round Tower at Copenhagen, is not only observable for its Structure, but for its wonderful Contrivance; its manner of Ascent being such, that a Coach may drive up to the Top thereof. See Church of Murcia.

Jerusalem Church in Moscow.

The Church in Moscow, called Jerusalem, can be no ordinary Pile, since John Basilides I. Czar of Muscovy, put out the Eyes of the Architect, because he should never build nor contrive such another.

Antwerp Cathedral.

The Cathedral at Antwerp, dedicated to the Blessed Virgin, contains no less than 66 different Chappels therein.

Great Towers with great Bells therein.

The Tower of Moscow is famous for having a Bell raised in it, which weighs 176 Tuns, tho' indeed 200 Tuns were allowed for the making it; it is 24 Foot high, the Clapper 21 Foot long, and weighs 7 Tuns. At Ghent in Flanders, in the Tower called Belfart, is a Bell named Roland, weighs 11000 Pounds-weight. In a Tower at Erfurd, in Upper Saxony hangs a Bell, weighing 25400 Pounds, and hath hitherto been accounted (but falsely) the greatest in the World. In Nanking in China, is a Bell 11 Foot high, and 7 in Diameter, weighing 50000 Pounds. In the City of Peking, in China, is a most prodigious Bell, weighing no less than 120000 Pounds; 'tis 11 Foot Diameter, and 12 high, and throws the Air with such Violence, as to break Windows, and

Of the Changes on Bells, and the first Ring of Bells, (especially in England) see in Arithmetick, Mr. Christopher Wase saith, Those People of the East used to wear Bells on their Legs for Ornament. As the Jews, Isa. Ch. 3. v. 16. & 18.

and almost overturn weak Cottages. Indeed, all *China* is full of Bells, hanging at every Piece of stately Work; but the *Turks* have no such Thing as Bells amongst them.

The Tower of *Morocco* is said to be so high, that the Hills of *Azafi*, 130 Miles distant from it, may be easily discerned; and one may ride to the Top on Horseback.

The *Stadthouse* of *Amsterdam* is a stately Edifice, founded upon some Thousands of large Piles drove into the Ground. Stadthouse at Amsterdam.

The *Cathedral* of *Magdeburg* in *Germany*, hath no less than 49 Altars in it. The *Cathedral* at *Ulm*, is not only remarkable for its Stateliness and Magnificence, but for its great Organ, 93 Foot high, and 28 broad, (the biggest Pipe 13 Inches Diameter) and furnished with 16 Pair of Bellows to afford Wind enough for its Use. Cathedrals at Magdeburgh, and Ulm in Germany.

The *Cathedral* Church of *Murcia*, in *Spain*, is remarkable for having above 400 Chappels therein, and for its curious Steeple, so built that a Chariot may easily ascend to the Top thereof. Cathedral of Murcia, in Spain.

The *Aqueduct* of *Segovia*, in *Spain*, built by *Trajan* the Emperor, is supported by 177 Arches in double Rows, reaching from one Hill to another. Aqueduct of Segovia.

The *Bridge* over *Saffrany*, in *China*, is 400 Cubits long, 500 high, and all but one Arch; therefore, by Travellers, called *Pons volans*. Bridge over Saffrany.

In the Island of *Salsete*, belonging to the *Peninsula* of *India* within *Ganges*, is a prodigious Rock, cut out in as prodigious a manner, having vast Receptacles one above another, some of 'em equal to a Village of 400 Houses, and adorned with strange Statues of Idols, representing Elephants, Tygers, Lyons, &c. Structures cut out of a Rock.

The

Golden House of
Arracan.

The *Golden House of Arracan*, in *India*, beyond *Ganges*, being a large Hall in the King's Palace, hath its inside entirely overlaid with Gold, having also a huge Canopy of massy Gold; from the Edges of which, hang above 100 *Combalenghe*, or large Wedges of Gold in form of Sugar-loaves. There is also seven Idols of massy Gold, of the height of an ordinary Man, whose Foreheads, Breasts, and Arms, are adorned with variety of Rubies, Sapphires, Diamonds, &c.

The Mosque at
Medina.

The *Mosque at Medina*, in *Arabia Felix*, is supported by 400 Pillars, and furnished with 300 Silver Lamps, and it's called by the *Turks*, *Mos a kiba*, or most Holy, because in it lies the Coffin of their Prophet, covered with Cloth of Gold, under a Canopy of Silver curiously embroidered, which the *Bassa of Egypt* is bound to renew yearly by the Grand Signior's Order, and then the old one being cut into Relicks, are sold at great Prices.

Mosque at *Mecca.*

The *Mosque at Mecca*, in *Arabia*, and Birth-Place of *Mahomet*, is very lofty, raised in fashion of a *Dome*, with two beautiful Towers of extraordinary Height and Architecture; it hath above 100 Gates, and a Window over each Gate, and hath great Adornments within.

Antiochian Cau-
sey.

The *Causey*, in the Plain of *Antioch*, almost three Leagues long, and passing over several Arches, is most famous for being begun and finished in six Months time by the Grand Vicer, in the Reign of *Achmet*. But much more famous must be that Wall of *Peloponessus*, six Miles long, fortified with five Castles, which when overthrown by *Amurath II.* was (upon the Rumours of a War) built up by the *Venetians*, Anno 1453. in 15 days. And much more

more famous the Cities, *Anchiale* and *Tarsus*, built in one Day by *Sardanapalus*, as witnesseth the Inscription of his Monument. *Teste, Strabo.*

(Cities built in one Day.)

The *Bridge of Quick Conveyance*, is worth Remark, being over the River *Sabu* in *Barbary*, which River runs between two Hills; for by the help of two large Stakes fix'd fast in the Ground (on either side one) and two strong Ropes extended between them; to one of which is tied a kind of big Basket, able to contain 10 Men; the Passengers being entered, and pulling one of the Ropes (which runs by a Pulley) are wafted over sooner than we could pass a Bridge running, of the same length.

Bridge of Quick Conveyance.

The Ten stately *Temples of Ethiopia*, all hewn out of the firm Rock, are not to be omitted, which are each proportionable in their Parts, with Gates and Windows in a regular manner, and said to have been all perfected in 24 Years. For the *Ichonography* of one of these Temples, see *Comment. J. Ludolphi in Hist. suam Ethiopicam, Lib. 2. Cap. 5. p. 235.* But now to come nearer home,

Temples of Ethiopia.

The *Palace of Versailles*, in *France*, stiled by some the *Golden Palace*, having extraordinary Gilding about it. The Access to it is over a spacious Plain, that yields a Prospect of a very magnificent Front every way; it would take up a Volume to describe the exquisite Curiosities of the Gardens and Water-Works which surround it for some Miles compass; there is one Walk of a very great length that passes under an Arch of Water, so contrived that the Pipes playing over you from each side, composes a regular Piece of watry Architecture; in other Places are Water-Works rising

Versailles in France.

rising up in many small Lines, and then bending off like a Palm-Tree; others, like a *Hercules* with a Club, seeming to maul a *Hydra*, out of whose Head spout Streams of Water, instead of Blood. In short, they are so curious, and so costly, that the playing of them, not only gives the Eye all manner of Entertainments in Art, but puts the King to the Cost of 2 or 300 Pounds. The Structure it self is Magnificent, Splendid, excellently Uniform and Lofty, containing in some Parts of it six stately large and high roofed Rooms like fine Halls, one above another.

Fontainebleau.

The Palace of *Fontainebleau*, built by *Francis I.* the Base Court, esteemed the fairest of all *France*, the Second Court containing the fairest and purest Fountain of all the World, wherefore the House is called *Fountain Belle eau*. The Palace is painted by the most curious Artists of *Europe*, being beautified with all manner of Histories. And it is a Treasury of the rarest Antiquities that can be procured throughout the World. To speak of the Noble Structure, with its many Galleries, &c. would exceed the Skill of the Pen, and Beliet of the Person.

The *Louvre* at
Paris.

The *Louvre*, the Royal Seat of the Kings of *France* formerly; it stands in *Paris*, the Front of Masonry, so enriched with Pillars, Freezes, *Architraves*, and all the Arts of Architecture, that its Beauty and Symmetry rather befits our Wonder than our Words. It was begun by *Francis I.* finished by *Henry* his Son, encreased by *Francis II.* *Charles IX.* and had the Addition of a most beautiful Gallery (a Wonder of it self) by *Henry IV.*

St. Paul's London.

St. Paul's Church in *London*, first founded by *Sebert*, King of the *Saxons*, Anno 610. where had stood a Temple of *Diana*, by reason

son of its Stars-attempting Pinnacle, had been fired many Times by Lightning, and twice consumed by dreadful Terrestrial Fires. Before the late Conflagration in 1666. it was a Structure taking up in length 690 Foot, therein excelling *St. Peter's* at *Rome* many Feet; was in height 102 Foot, and in breadth 130, spreading over three Acres and half of Ground. It was built as other Cathedrals, in form of a Cross, upon mighty high Arches, in the midst whereof was a Tower rising 260 Foot, and on that a Spire in height 260 Foot more; in all from the Ground 520 Foot, above which was a Globe or Bowl of Copper gilt, of 9 Foot in compass, whereon stood the Cross 15 Foot and an half high, and almost 6 Foot across; above all stood an Eagle or Cock of Copper, gilt, 4 Foot long, and the breadth over the Wings 3 Foot and an half. The new Structure stands in place of that which was destroyed in 1666. being in the highest part of all the City, and rising like a young *Phœnix* out of the Flames, carries the Majesty and State of the other, and all Things but the Antiquity. That part of the Cross which hath been used for Prayers, and twice honoured with her Majesty's Presence for Solemn Thanksgivings, promises for the whole Cathedral so very much, that it may be said, when finished, it will excel the rarest Structures of *Christendom*, for Architecture, Painting, Workmanship, and Curiosity.

The Cathedral of *Salisbury*, in *Wiltshire*, raises our Wonder as high as doth its Steeple in the Air, founded upon four great Pillars, the Beauty whereof is admirable; and the Church deserves as much the Use of the Eye to see it, as it did these Lines of the Poet to describe it.

O

How

Salisbury Cathedral.

*How many Days in one whole Year there be,
So many WINDOWS in one Church we see;
So many MARBLE PILLARS there appear,
As there are Hours throughout the fleeting Year;
So many GATES as Moons one Year doth view,
Strange Tale to tell, but not so strange as true.*

Cathedral of Wells.

The Cathedral of Wells is a very beautiful Structure; and the Frontispiece of the West-end hath a more than ordinary Ornament, being from top to bottom all covered with curious Imagery of Stone of a curious Antique Fashion, and very artificially Embowed.

The first Stone-
Bridge built in
England. See in
Inventions.

We might add many other Buildings of England, were it not to enter upon too large a Subject; as the New Palace of *Blenheim*, the famous Structures of *York Minster*, the Church of *Winchester*, *Westminster Abbey*, and *Henry the Seventh's Chappel* therein; the Palaces of *Hampton Court*, *Windsor*, *St. James's*, are of no small Consideration, but being just at home we the rather decline to say more thereof, fearing we may prejudice rather than advance that Esteem they will get by seeing and beholding them. For more of Architecture, see these

AUTHORS,

Democritus, Anaxagoras, Archimedes, Silenus, Aristotle, Theophrastus, Cato, Varro, Pliny, Nigri-gentus, Leo Baptista, Fryer Lucas, Albertus Du-retus, &c.

Andrea Palladio, Vincent Scammozzi, Sebastian Serlio, Jacomo Barozzio, Sirnamed Vignola; Leon Baptista Alberti, Daniel Barbaro, Patri-arch of Aquileja, Josepho Viola, all Italians.

Philibert de Lorme, John Bullant. See Davil-let's, Muet's, Savot's, and Perault's, all French. Vignola's Architecture, Lipsius's Amphitheatro, Pyrrho Ligorio. For House-Building, see Ley-bourn's Guide for Builders, Philips's Purchasers Pattern, City and Country Purchaser. Of

Of SURVEYING.

GEODÆSIA, *Planimetry*, or Surveying of Land, is an Art that carries no small Estimation among the curious; for which you must have (beside other Instruments proper to the Matter) a Ruler of about 7 or 8 Inches long, and an Inch and an half broad, and place two Scales, one of 12 and the other of 11, in an Inch, describing a Line of Cords two Inches long, or somewhat less than 60 or 90 Degrees. The Radius of which, or 60 Degrees, being equal to the Semi-Diameter of the same Circle, and after the order of these on the other side, place several other Scales which may be of 16, 20, 24, or the like in an Inch, whereby you have an Instrument ready for fundry Occasions; and for this Scale in its use, you must have a Pair of Brass Compasses, also a Pair of Catem Compasses, having Screws to alter the Points, as to draw as occasion requires, to the beautifying the Plats with Black Lead, or the like. Being provided with Instruments, and Things fit for Measuring, you must consider the Measures and reduce that which is called Statute-Measure into such Measure as is Customary and Usual; for by an Act of 23 *Edward I.* an Acre of Land was to contain 160 Perches or

Acre of Land.

Poles to be made out square, &c. But by Custom, in divers Places of this Kingdom, this has been altered by the varying of Perches in the Number of Feet, as 18, 20, 24, and sometimes 28 Feet to the Perch; and this requires the Surveyor's Diligence to reconcile the one to the other, of which we shall give some In-

sight. Suppose you are to reduce 5 Acres, 2 Roods, 20 Perches, measured Statute-Measure, by 18 Foot the Perch; in this case seek the least Proportional Terms between 18 and 16 Foot and an half, and to effect it, because the latter carries with it a Fraction, reduce it to two halves; and that they may be of one Denomination, let the 18 Foot be likewise halved, and you will find them in this manner $\frac{33}{32}$, which must be abbreviated by 3, saying, how many times 3 in 33, and the Answer is 11 times 3, and doing the same by 36 it will be found to be 12 times 3, and thereupon the two Proportional Terms between $16\frac{1}{2}$ and 18 will appear to be 11 and 12; which being done, reduce the given Quantity of 5 Acres, 2 Roods, and 20 Perches, all into Perches, you will find them to be 900 Perches; then observe what is the Proportion the Square 11 (which is found 121) bears to the Square 12 (which is found 144) the same does the Acre, containing 16 and an half Feet to the Perch, bear to that that contains 18 Feet to the Perch or Pole.

Always observe in this way, particularly, that the greater Measure is to be reduced into the lesser, then multiply the Quantity given, viz. 900 Perches by 144, the larger Square, and you will find the Product to be 129600; and that divided by 121, the Quotient to be 1071 Perches and $\frac{9}{121}$ Parts, which reduced into Acres, gives us 6 Acres, 2 Roods, and 31 Perches and $\frac{9}{121}$ Parts of a Perch, and this compeers with the Quantity of Acres parallel with Statute-Measure: But on the other hand, if it had been required, for the reducing Statute-Measure into Customary-Measure, then multiply 900 Perches, the given Measure

Measure or Quantity, by 121, which is the lesser Square, because the lesser is to be reduced into the greater, and you will find the Product to be 108900; which, if divided by the greater Square 144, will give for the Quotient $756\frac{1}{4}$, which being reduced into Acres, is 4 Acres, 2 Roods, and $36\frac{1}{2}$ Perches. This Rule is to be taken with whatever Customary-Quantity is proposed in their Difference and Degrees, as when the Perch is 20, 24, or 28 Foot, &c.

If in this Mensuration it is required to reduce Perches into Acres, and so on the contrary, observe that by the afore-mentioned Statute, an Acre of Ground should contain 169 square Perches or Poles, being every Rood four square Perches; so that if you find any Number of Perches that must be done into Acres, the given Number must consequently be divided by 160, and the Acres are shewed by the Quotient; but if there be any Remainder, and it be under 40, they are Perches, but if they are found to exceed 40, divide by 40, which you will find to be the Number of Perches contained in a Rood; so that the Quotient will be Roods, and the Remainder Perches.

But to reduce Acres into Perches, there is no great difficulty, considering it is but turning as it were backward; for in the other, to bring Perches into Acres, the Division was by 160, but in this case, to turn Acres into Perches, it must be multiplied by 160, which being observed, we now come to the Purpose. If the Piece of Ground that is to be measured be square, having considered that the Acre is 160 Perches, then multiply one of the sides by the other joyning to it, and it will be

found the Sum is to be divided by 160; and suppose your Ground be 40 Poles one way, and but 20 another, these multiplied make 800 Poles, which divided by 160, shews 5 Acres to be the Content.

To measure a Triangular Piece of Ground.

In measuring a Triangular Piece of Ground, first observe to measure the longest side of the Triangle, as also the Perpendicular opposed to the said long side, then multiplying the half of one by the whole of the other, divide by 160.

Suppose the Side be 60, the Perpendicular 40, 60 must be multiplied by 20, or 40 by 30, which so done, make 1200, which being divided by 160, renders 7 Acres and an half for the true Content.

To measure a Trapezia.

If you are to measure that which is called a *Trapezium*, or double Triangle, then both the Perpendiculars must be multiplied by the Diagonal Line, as being the usual common Base of both the Triangles, and must be divided by 160 in this manner; Let the Diagonal Line be 40, and one of the Perpendiculars 15, the other 8, which being put together make 23, which being multiplied by 20, which is half the Diagonal Line, make 460, and that divided by 160 renders 2 Acres, 3 Roods, and 20 Poles.

Circular Piece.

If the Ground be Circular, then half the Diameter must be multiplied by half the Circumference, and the Product divided by 160, whereby the Diameter of the Circle being found to be 140 Poles, the Circumference is 440 Poles; and the half of these two producing 220 and 70, they are to be multiplied together, and then produce 15400 Perches, which being divided by 160, produce 96 Acres and a $\frac{1}{4}$.

If

If the Piece of Ground given be Oval; suppose it to be 30 Perches one way, and 40 the other, to know the Content, multiply the length 40 by the breadth, which as aforesaid is 30, and it will be found to make 1200, which again divided by $203 \frac{7}{101}$ will yield 5 Acres, 3 Roods, and 23 Perches; and by this last Number so working, may be found the Number of Acres contained in a Semi-Circle, a Quarter, or Sixth Part, or any Section or Division of a Circle greater or lesser, multiplying the half Diameter.

Oval Piece.

If you are to measure Wood-Land, which is the most difficult of all, fix a Mark at either corner of the Wood, that three Marks may be seen at once, then having a Quadrant in your Hand, lay it flat thereon and take Sight to two of the Marks on each side; and then upon Paper, mark the Degrees of the Angle, and measure to the two Marks in Sight, and place them on the same Paper by your Line of equal Parts, and do so at all other corners, 'till you have closed up the Plat or Wood, which then may easily be brought into Acres by the Line of equal Parts. *Note*, If your Quadrant be too small, join two together, or do it by a Board for want of a Plain-Table, so your Plat upon the Paper make three Triangles, and to measure for one of them, measure for one Triangle the longest Doted Line by half the middle Doted Line or Perpendicular, which gives the Content; and by so working the other two Triangles, it is compleated.

To measure
Wood-Land.

A U T H O R S,

Philips's Purchasers Pattern, and in his *Mathematical Manual*; *Rathborn*, *Atwell*, *Love*, *Wing*, *Leybourn*, *Holwel*, and the Ingenious *Mr. Adam Martindale's Country Survey-Book*.

Of GAUGING.

To know the
Burthen of a
Ship.

IF you would know the Burthen of a Ship, or how many Tun she will hold, or commodiously carry; first inform your self by measuring the length of the Keel, and take the breadth at the Midship-Beam, and the depth of the Hold; and these three you must multiply one by the other, then the Product thereof must be divided by 100, and so the Tuns of Burthen will be plainly demonstrated. As,

Example.
For Men of War.

Granting the length of a Ship's Keel to be 50 Foot, and at the middle Beam her breadth 20, and the depth in the Hold 10 Foot; then to know how many Tuns she will carry, let 50 be multiplied by 20, and it makes 1000, and that again multiplied by 10 makes 10000; the which when divided by 100, and cutting off the two last Figures, it shews the Ship to be 100 Tuns of Burthen: But this way is usually attributed to Men of War, but

Merchant-Ships.

for Merchants Ships, they give no Allowance for Masts, Sails, Ordnance, and Anchors, the which though they are a Burthen, yet are not accounted Tunnage; wherefore, as to Merchants Ships, the Product must be divided by 95, and then a Merchant-Ship of the afore-said length, breadth, and depth, will be found 105 Tuns $\frac{25}{95}$ Parts Burthen, though there must be regard had in this case to the middle of the Ship for fear of erring, and if you are doubtful whether you are right or not. If the Ship be irregularly built, find out how many Cubick Feet it contains, and reckoning that a Cubick Foot of Water weighs, as generally accounted, 55 *Avoirdupois*, or 16 Ounces

Ounces to the Pound; so that consider 2000 Weight being allowed to the Tun, and every Hundred 112 Pound, the Dimensions must be taken accordingly, and by this Rule take your Proportion. Another way is,

Measure on the outside of the Ship to her Light-mark, when she is in the Water unladen, and there you will find the Weight or Content of the empty Vessel; so that if you take your Measure from her Light-mark to her full Draught of Water, being laden, you'll have the true Burthen of her Tunnage. Also, if you are desirous to know the Burthen of another Ship, double or treble of the same Mould, or a greater or lesser Proportion, multiply the Measure of the length and breadth, and depth Cubically; after that is done, double or treble the Cube, and Extracting the Cube Root, your Work is done. A new Method see in the *Ship-Builders Assistant*.

Another way.

To know what Quantity of Liquid, or other Commodity is contained within any sort of Cask, or the like, two Things are to be considered; First, That seeing Vessels are mostly of irregular Forms, it must be the care of the Gauger to consider how they are to be reduced to regular Proportions; and, Secondly, To know the true Content of the Gallon in Cubick Inches, or Parts of a Foot; and for the first of these, carefully measure the Diameter of the Cask at the Bung and Head, and by those Diameters to find out the Area of their Circle; and so take two Thirds of the Area at the Bung, and one Third at the Head, which being added will be found to be the mean Area of the Cask; and if you multiply that Area by the length of the Vessel, it will shew how many solid Inches are contained in that

that Vessel; which being divided by the Number of Cubick Inches in one Gallon, the Quotient will demonstrate what Number of Gallons the Cask holds. As,

Example.

If we suppose that a Vessel of Wine be 18 Inches Diameter at the Head, and 32 Inches at the Bung, the Length being 40 Inches, if you would be satisfied in the Content, consider that

One Third of the Area at the Head, is found to make in its due Proportion, } 85, 823

And two Thirds of the Area of the Bung, make } 536, 166

And then consider the Sum of the Two to be } 620, 909

When multiplied by the Length 40

959
Makes Inches solid 24839, 560

These being divided by the solid Inches in one Gallon of Wine, they being 231 Inches for the Content, yield 170 Gallons, 530 Parts, which is some small matter above half a Gallon; yet some raise a Dispute about the certain Number of Inches in a Gallon, yet the

The Wine Gallon.

The Ale Gallon.

Wine Gallon is generally concluded to consist of 231 Cubick or Solid Inches; and the Ale Gallon is held by many in Computation with the Wine Gallon as 4 to 5, so that in such a degree of difference, it must be $288\frac{1}{2}$ Inches. But upon the Imposition of Excise it has been generally esteemed but 282 Cubick Inches.

How much upon Excise.

To know the Content of any Wine or Beer in Ale or Beer Gallons, observe for the Beer-Barrel,

The

The Diameter at the Head, } 9 Inches, 9 Parts. The Beer Barrel.

For the Diameter at the Bung, } 23 Inches, 0 Parts.

The Length, 27 Inches, 4 Parts.

The Kilderkin has for its Measurings,

The Diameter at the Head, } 16 Inches, 1 Part. The Kilderkin.

Its Diameter at the Bung, } 18 Inches, 6 Parts.

The Length, 12 Inches, 1 Part.

And these are called the Coopers Scantlings, and very well agree with the received Quantity of the Ale Gallon, allowing it to be 288 Inches and a half; so that the Barrel, of this was reckoned to be a Pint over 36 Gallons, and a Kilderkin a Pint and a half over the half of that, though, as is said, this Gallon has been agreed upon by a Committee of Excise to hold no more than 282 Cubick Inches.

The Coopers Scantlings.

Now to measure Brewers Vessels, &c. whether Square or Round, or of any other Form; to know their true Content, observe what hath been said in measuring such Bodies, dividing by 282 the Inches in one Gallon, demonstrates the Content in Gallons; and if you divide the Gallons by 36, the Contents in Barrels are shewed; and thus, by knowing the true Number of Inches any Measure is to be taken.

To measure Irregulars, &c.

AUTHORS,

Oughtred, Ward, Anderson, Everard, and Phillips's Purchasers Pattern; also in his Mathematical Manual; likewise Mr. Collings's Country Gauger, Printed for George Sawbridge.

Of

Of DYALLING.

If the Planets had Understanding they would envy Dyals, and turn all Retrograde for fear of being surprized by this pretty Sport of Men, and the Hours would be Ashamed (being the Daughters of Day and Light) to be Painted thus with Shadows. See Cassiodorus, l. variat. Epist. 45.

GNOMONICA, Horology, or Dyalling, is a curious Art; and to be an exact Horologian, we must observe to have the exact Elevation of the Pole, for by that the determination of the Center of Hours must be had, also the Stile of the Dyal's Altitude, and the Order of it. You must likewise know the true Meridian Line, that so the Dyal's Meridian Line may have its Place directly under the Meridian of the Place where it is posited. And he that undertakes this Work, must be furnished with such Mathematical and Astronomical Instruments and Materials as may give him a due understanding of the Proportions of Time; as a Rule, Compass, Astronomical Quadrant, divided exactly into 90 Degrees, with a Description of the Hour, Line, and Points.

Of Sun-Dyals there are two sorts, the Pendulums, and the Fixed ones; the Pendulums are those that being hung up, or held up, shew the Hours by the height of the Sun; as the Astrolabe, the Cylinder, the Quadrants, the Astronomical Rings, and others of the same kind.

The Fixed Dyals require a certain Situation, to shew the Hours by the Motion of the Sun from East to West, and upon this account they are more exact than the Pendulums.

The Center of the Dyal is that Point of the Plane of the Dyal, in which the Axis of the World is cut by the Plane.

The

The Perpendicular Stile is a strait Line drawn from the Center of the Earth to the Plane of the Dyal: The Center then of the World, or of the Earth, in a Dyal, is the Top of the Stile, which is Perpendicular to the Plane of the Dyal.

The Pole of the Plane of the Dyal, is the Pole of a great Circle equi-distant from the Plane of the Dyal.

In all Astronomical Dyals, that part of the Stile which by its Shadow sheweth the Hour, must be in the Axis or Axle-Tree of the World.

The greatest Curiosity of this Art is to have the Hours well described or proportioned to the Sun's Motion; and to do it, there are granted to be two Right Lines, secting each other at Right Angles crossways, one of them being the Meridian Line, or the Twelfth Hour Line; the other is termed the Occult Line, by which the first crossways are cut to the Right Angle; and this is generally called the Line of Hours, because in it the Horary Points are designed; but if we come to its more proper Denomination, it may be called the Equinoctial Line, since it represents the Equinoctial Circle, the chief Rule of all Hours.

To have a Right Dyal, you must be sure to know its Right Center, or the Center of the Hour; to do which, be very mindful of the Elevation of the Pole, especially in the Horizontal Dyal, or any of that sort, for they will not declare the Hours in any place, but under a certain Elevation, and therefore if they are removed far, you must be again proportioned to that Elevation. Conjecture we then, the Pole to be elevated 49 Degrees in this Region, which is 41; place here the Foot
of

of your Compass in the Instrument's Center, extending the other Foot from that to the Equinoctial Line described in the Instrument, wherein that Part, the 41 Degrees, is cut by the Radius; so numbering from the Twelfth Hour Line, and transfer this Extension of the Compass upon the Dyal, having yet the Compasses Foot fixed in the Meridian and Equinoctial Line's Concourse, and the other fixed in the distant Part of the Meridian Line, determining that Point to be the Hours Center; and so from thence, and each Point in the Equinoctial Line, you are to draw all the Lines which some term the Arches of the Hours. And further, a Line is to be drawn through the Center of the Hours, a Line Parallel to the Equinoctial; and this is to be accounted the Line of the Sixth Hour, as well in the Evening as in the Morning, as likewise of the Hours of Four and Five in the Evening are to be drawn out beyond the Center of Hours; for the like Hours in the Morning, and so of the rest equally compeering.

The Sun's Motion
regular, but the
Shadow irregu-
lar.

Note, 1. The Motion of the Sun is regular, it moving equal Space in equal Time; but the Motion of the Shadow irregular in all Parts of the Earth, unless under the two Poles, and that more or less, according to the Constitution of the Sphere, and Situation of the Plane. And therefore Scientifick Dyalists, by the Geometrick Considerations of Lines, have found out Rules to mark out the irregular Motion of the Sun's Shadow in all Latitudes, and on all Planes, to comply with the regular Motion of the Sun.

To Erect Perpendiculars, draw Parallels, &c.
See *Euclid* and *Oughtred*.

For

For the Situation of the Plane, see and use the *Declinator*.

To find a Meridian Line; if the Sun shine just at Noon, hold up a Plumb Line, so as the Shadow may fall upon your Plane, and that will be your Meridian Line. To find the Meridian Line easily.

Altho' Dyalling may originally be accounted a Science, yet the Generosity of its Contemplators, in communicating their acquired Rules, its now, to many of the Ingenious, no more difficult than an Art. It being not necessary to understand Geometry, or Projection of the Sphere, which are only useful to those who would understand the reason of this Art: For if a Man knows how to draw a Line between two Points, describe a Circle with Compasses, erect a Perpendicular, and draw one Line Parallel to another, he may draw a Dyal for any given Plane, however situated in any Latitude. Dyalling now but an Art.

To frame an Equinoctial Dyal, two Lines must be drawn at Right Angles, whereof one is to be the Meridian, the other that of the Hour Six, Morning and Evening; and from the usual Section of these Lines, draw a Circle as you think fit to be divided into 24 proportionable and equal Parts, for in this kind of Dyalling, all the Intervals must be equal as to the Hours. An Equinoctial Dyal.

The Polar Dyal goes Parallel to the Axis of the World, lying as it were in it, and is to be elevated above the Horizontal Plane the same Degrees as the World's Pole, the lowermost part in many Places containing not above 4 Hours, yet generally the Morning Hours are 4 and 5, towards the left side the Evening Hours 7 and 8, but the topmost shews the Hours from 7 in the Morning to 5 in Polar Dyal.

in the Evening, but not the 6th, by reason the Sun then is Parallel to the Dyal, glancing then upon its side.

A Vertical Dyal.

A Vertical Dyal may be done upon a Regular Wall, the same way as before in the description of a Right Dyal, yet there is some difference to be observed, not only in the Situation, but likewise in the Vertical; in case of being certain of the Center of the Hour, the Polar Elevation Degrees are here to be taken for the Altitude of the Stile, allowing the Degrees Compliment, though the Horizontal Dyal is the contrary: However, there being a distinction between a Vertical to the North, and a Vertical to the South; the Vertical to the North is, as we may suppose a Meridian Inverted, having the Center of Hours downwards, falling short of shewing the Hours; for in some adjacent Countries, it shews but from 4 to 8 in the Morning, and the like in the Afternoon; and the South Vertical hath the Center of Hours, and its Stile upwards, shewing from 6 in the Morning to Noon.

Note, The Moon at Full tells the Hours on a Sun-Dyal exactly true.

An Admirable Dyal upon the Fingers and the Hand.

To see by your Hand what a Clock it is, take a Straw, or such like Thing, of the length of the Index, or second Finger; hold this Straw very right between the Thumb and the Forefinger, then stretch forth the Hand and turn your Back and the Palm of your Hand towards the Sun, so that the Shadow of the Muscle, which is under the Thumb, touch the
Line

Line of Life, which is between the middle of the two other great Lines, which is seen in the Palm of the Hand; this done, the end of the Shadow will shew what a Clock it is: For at the end of the first Finger, it is 7 in the Morning, or 5 in the Evening; at the end of the Ring-Finger, it is 8 in the Morning, or 4 in the Evening; at the end of the little Finger, or first Joint, it is 9 in the Morning, or 3 in the Afternoon; 10 and 2 at the second Joint; 11 and 1 at the third Joint, and Mid-day in the Line following, which comes from the end of the Index. See Artificial Rarities in GEOMETRY.

Carrovages, an Apprentice to a Clock-Maker in *Pavia*, made *Alciat* a Clock so contrived, that when the Hammer struck the Bell, it also struck Fire out of a Flint, which lighted a Match first, and afterwards a Lamp, which at once gave a Man an Account of the Night, and furnished him with a Light to rise by.

The Art of Dyalling may be performed Geometrically, by Projecting the Circles of the Sphere upon the Plain it self with Scale and Compass; Arithmetically, by the Canons or Tables of Artificial Sines and Tangents; and Instrumentally, by a Plain and Portable Instrument, accommodated with Lines for that purpose, and called a Horological Trigon, whereby Dyals may be Delineated upon all sorts of Plain Superficies, the Description of which Instrument and its Use, see more at large in Mr. *Leybourne's* Art of Dyalling. See also the Description and Use of the double Horizontal Dyal in *Henry van Etten's* Mathematical Recreations.

Of Dyalling.

Of the famous Clock at *Heidleberg* in *Germany*, and that at *Leghorn*, as also one made by *Copernicus*, see in the Admirable Workmanships in the Treatise of *GEOMETRY*.

At *Cambray* in the *Spanish Netherlands*, is a Sun-Dyal of singular Workmanship, wrought by a Shepherd. The Sun-Dyal in the Privy-Garden, before *Whitehal* was burnt, was a curious Piece of Workmanship.

There is also a famous Clock at *Upsal* in *Sweden*.

He who desires to make a further and more perfect Progress in this Art of Dyalling, will find it beneficial thereto, to peruse these

A U T H O R S,

Maurolycus, *Ptolomæus*, *Kircherus* and *Moxon*. *Artificial Clock Maker*, *Leybourn's Art of Dyalling*, Folio and Quarto, &c.

Of NAVIGATION.

ARS NAUTICA, *Histiodromica*, or the Art of Sailing or Navigation, is that Art which teacheth how to direct a Ship thro' the Seas to the proposed Harbour.

This is a Mathematical Art, having a great dependance upon Astronomy and Geometry, and requireth the Knowledge of the Mariner's Compass, and the Lead of the Sea-Coasts, Capes, Rocks, Promontories, Harbours; of the Distances of one Place from another; of the Ebbing and Flowing of the Sea; of the Longitude and Latitude of every Place: It requires likewise the Knowledge of Piloting, Steering, and ordering the Motions of the Ship;

Ship; also the Use of several Instruments fit to take the Altitude of the Sun, Latitude of a Place, &c. as of the Cross Staff, the Quadrant, the Nocturnal, the Plain Scale, *Gunter's* Scale, &c. The Description of all which, more befits a Volume than a Chapter.

The Mariner's Compass is a round Plane, whose Circumference is divided into 32 equal Parts by straight Lines, called *Rhombs*, passing thro' the Center. Their Terms are as follow,
 N. signifying *North*, E. *East*, W. *West*, and S. *South*.
 1. N. 2. N. by E. 3. N. N. E. 4. N. E. by N. 5. N. E. 6. N. E. by E. 7. E. N. E. 8. E. by N. 9. East. 10. E. by S. 11. E. S. E. 12. S. E. by E. 13. S. E. 14. S. E. by S. 15. S. S. E. 16. S. and by E. 17. S. 18. S. by W. 19. S. S. W. 20. S. W. and by S. 21. S. W. 22. S. W. and by W. 23. W. S. W. 24. W. and by S. 25. W. 26. W. and by N. 27. W. N. W. 28. N. W. and by W. 29. N. W. 30. N. W. and by N. 31. N. N. W. 32. N. and by W.

Points of the
Compass.

The Height of the Pole, of so great Benefit to Sailors, is to be found out thus; Observe first the height of the Sun at Noon-day, with an Astrolabe, or other Instrument of that kind; then take the Declination of the Sun from the height, if the Sun declines from the Equator towards the Northern Pole, or add the Declination of the Sun to the observed height, if the Sun declines towards the Southern Pole; the remaining Number, or the Sum made up by Addition, gives the height of the Equator, whose Complement to 90 Degrees (as they speak) is always the height of the Pole. Thus, if the height of the Equator, above our Horizon, be 60 Degrees, the height of the Pole is 30 Degrees, because 30 added to 60, make up 90; and if the Pole be elevated

but 10 Degrees, the height of the Equator is 80, because this Number is the Compliment of that.

NAVIGATION, as relating to private Seamen, is commonly distinguished into three sorts, 1. Plain-Sailing, 2. Mercator's Way, 3. Circular Sailing, or Sailing by the Arch of a Great Circle.

Plain Sailing.

Plain Sailing, or Sailing by the Plain Chart, is the plainest and Foundation of all the rest; and near the Equinoctial there is need of no other to be used, because there the Degrees of Longitude, as well as of Latitude, are all equal, each Degree being divided into 60 Minutes, or Miles, tho' they are somewhat more than *English* Miles, each Minute or Mile containing about 6000 Feet. In this Art the Seaman hath his helps, 1. His Compass to direct him which Way he goes; so that Steering thereby, he always knows which way he fails to a very small matter. 2. A careful Observation by the Log-Line, or some other good Way, how many Miles or Leagues (containing each three Miles) he fails every Hour, and so every Watch, and so every Day. 3. The Knowledge and Observation of the Latitude, both of the Place from whence he fails, and where he is arrived, or whether he is to fail. And out of these three Things, and the Doctrine of Plain Triangles, he comes to know all that is necessary for the keeping of his Account; so that he may know at any Time where he is, how far he hath failed, and which way, and upon what Point of the Compass he is to steer, and all this by the plain Rules of Rectangular Triangles.

Rectiline Trigonometry.

The Rectiline Trigonometry teacheth us how to measure Triangles, made of straight Lines. An Angle is measured by Degrees, so a straight Angle

Angle is an Angle of 90 Degrees; an acute Angle is an Angle of fewer than 90; an obtuse Angle contains more than 90 Degrees. This Science of Rectiline Trigonometry demonstrates this Proposition of great Use in Mathematicks, that the three Angles of all Rectiline Triangles are equal to two straight ones. All the Angles of a Triangle may be acute, but there can be but one straight or obtuse. If one of the three Angles of a Triangle be straight, the two others are equal to a straight Angle. Who knows the Degrees of two Angles, knows the Degrees of the third, because all three make up 180 Degrees. All the Angles of a Triangle being equal, all the Sides are likewise equal. And thus much for Rectiline Trigonometry.

To sail by Mercator's Chart, is little else Mercator's Sailing. than coming to a Knowledge of the true Latitudes, Meridians, and Elevations of the Poles, Miles, Minutes, &c. as when it so falls out that one Place is under the Equinoctial, and the other nearer one of the Poles, then they find the Meridional Minutes answerable to that Place which hath Latitude, is to be accounted for the Meridional difference of Latitude, or that Latitude enlarged. Again, Suppose both Places are towards one of the Poles; thereupon subtract the Meridional Minutes that are found answering to the lesser Latitude, and the Remainder will be found to be the Meridional Minutes required; or if they find one Place to have North Latitude, and the other to be in South Latitude, then add the Meridional Minutes, appertaining to either Place together, and they will then find the Sum thereof to be the Meridional Minutes required, &c.

Circular Sailing.

Circular Sailing, or failing by the Arch of a Great Circle, is difficult and of little use, altho' thought to be the best by some, as shewing the nearest Way and Distances between any two Places; yet for that, the Seamen seldom keep to their Course near this Arch, but are either drawn aside from it by some Conveniences of Winds and Streams, or else are forced away by cross Winds or Interposition of some Head-Lands or Islands, with other little intervening Hindrances, makes it disused and neglected.

Of Voyages and Travels, see Vol. I. p. 170. and the Treatise of TRAVEL; and take here the following Brief Account of the

First VOYAGES and DISCOVERIES made in America.

First Navigations
to America.

Anno 1485. *Hernando Cortes* sailed out of Spain to the Island of *St. Domingo*; and afterwards went to *Mexico*, where *Montezuma* was Emperor; and (joyned with the *Taxalans*) conquered the *Mexicans*.

Anno 1492. August 3. *Christopher Columbus*, with 120 Persons, set sail for to make Discoveries in *America*.

Anno 1496. *Sir Sebastian Cabot*, at the Charge of *Henry VII. of England*, sailed to *America*, discovering from *Cape Florida*, all the North East Coast thereof beyond *Newfoundland* in the North.

Anno 1501. *Americus Vesputius*, a Florentine, employed by *Emanuel*, King of *Portugal*, to find out a nearer Way to the *Molucco's*, made a Voyage to *Cape Augustine*, on the Coast of *Brasil*, giving Name to all that vast Tract of Land, viz. *America*.

Anno

Anno 1520. Ferdinando Magellanus, a Spaniard, made his Voyage and was killed.

Anno 1526. Francis Pizzaro sailed from Spain, to the West-Indies to discover the South-Sea.

Anno 1530. Mr. Hore set out for further Discovery of Newfoundland.

Anno 1567. Sir John Hawkins made a Voyage to Guiana, with whom was Sir Francis Drake.

Anno 1572. Sir Francis Drake set sail for America; in 1577. he made his Voyage round the World; in 1585. he made another Voyage to America, and in 1595. his last, where he died in his Voyage.

Anno 1575. Captain John Oxenham sailed for the West-Indies, in a Ship of 140 Tuns, and lost his Life.

Anno 1576. Sir Martin Frobisher made his first Voyage; in 1577. another Voyage was made, and 1578. he made another Voyage, having 15 Sail of Ships.

Anno 1585. Mr. John Davis made his first Voyage for the North-West Discovery; in 1586. a second Voyage, and 1587. a third, making a Discovery to 73 Degrees.

Anno 1586. Sir Thomas Cavendish made a prosperous Circumnavigation of the Ocean, with 3 Ships and 120 Men.

Anno 1586, 89, 92, 94, and 97, the Right Honourable George Lord Clifford, Earl of Cumberland, made several Voyages and Adventures against the Spaniards in America, the last, viz. in 1697. being with 18 good Ships, and 1000 Men under his Command.

Anno 1595. Sir Walter Rawleigh set sail for Guiana, and at his Return, enduring 14 Years Imprisonment, made afterwards another Voyage to Guiana, for discovery of a

Pliny complains, one little Seed of Hemp, in short time produces a large Sail, which with Wind carries a large Ship to Sea, occasioning Men to Perish, as if they had not Earth enough to Perish in.

Gold-Mine, but after his coming back, he was Beheaded. See Mutability of Fortune, &c. *ASTROLOGY.*

Anno 1602. Captain *George Weymouth* set forth with two Fly-Boats at the Charge of the *Muscovy Company*, to find out the North-West Passage.

Anno 1605. Captain *James Hall* made his Navigation to *Greenland*, and in 1606. a second, in 1607. a third, and in 1612. a fourth, being then slain by a Savage.

Anno 1605. *Stephen Burrough*, *Mr. Pet*, and *Mr. Jackman*, made a Navigation to *Nova Zembla*.

Anno 1607. Captain *Henry Hudson* made his Voyage to 80 Degrees, and Perished in his Return, by some of his Men forcing him, his Son, and six more, to go into a Shallop in the Night, and seek their Fortune.

Ships were never used in *England* 'till after *Cæsar's* coming, since which we have arriv'd to great Perfection in Building those Floating Castles, (the true Walls and Bulworks of an Island) and have exceeded all Nations in their Stateliness, Structure, and Strength; before that Time we had only some small Vessels made of Boards and Wicker.

For Voyages made to several other Parts of the World, see those published by *Hennepin*, *Frykes*, *Misson*, *Dellon*, *Troger*, *Hack*, *Du Quesnes*, *La Salle*, *Wheeler*, *Patin*, *Rhamnusius*, *Bernier*, *Sharp*, *Lassel*, *Grelot's* to *Constantinople*, Voyage to *Kilda*, to *Athens*, to *South America*, to *Mount Libanus*, *Brun's* to the *Levant*, *Gage's* to *New Spain*, the *Preacher's*, *Coriat's* *Crudities*, *Lithgow's*, *Blank's*, *Ray*, *Burnet's*, *Vanshal*, *Baritti*, *Glanus*, *Magellan's*, *Dampier's*

Dampier's, &c. See at the end of our GEOGRAPHY.

A U T H O R S,

Blundevill's Exercises, Phillip's Geometrical Seaman, Oughtred's Key of the Mathematicks, Phillip's Mathematical Manual, Seller, Everard, Wright, Newhouse, &c.

Of the MILITARY ART.

THIS Art teacheth Order and Discipline to Soldiers, for the good Management and Conduct of Armies, and to prevent Disorder and Confusion, makes them acquainted with all manner of Postures, Marches, and Countermarches, thereby to render themselves formidable, not only to withstand, but annoy their Enemies. It may be called the Science of Arms, or the Art of War, whereby Princes and Kingdoms may be defended from unjust Invasions, Usurpations, and Oppressions, attempted by Ambitious Princes, &c.

Of old an ordinary *Grecian* Army did contain 28672, among whom we reckon not those that were upon the Elephants, who were sometimes in greater Numbers, sometimes in lesser. This Army was divided into Horse and Foot. The Foot was divided again into *Oplites* and *Pfiles*; (the *Oplites* were those that wore a heavy Armour, the *Pfiles* were slightly Armed) the Number of which *Oplites* were always double the Number of the *Pfiles*, and the *Pfiles* double the Number of the Cavalry. All the *Oplites* of the *Phalange* were put in one Battalion, whereof the Front contained 256 Men, and

A *Grecian* Army.
what Number it
contained.

and the Wing 16. Of all the *Pfiles* of the *Phalange*, the *Grecians* made two Battallions, each having 128 Men on a Breast, and 8 in the Flanks; all the Cavalry of the *Phalange* was divided into 16 squar'd Turmes, or Troops, whereof each did contain 64 Men. In a *Grecian* Army, made up of 4 *Phalanges*, there were 4 Battallions of *Oplites*, 8 of *Pfiles*, and 64 Troops of Horse.

In the *Roman* Legions there were 4 different sorts of Men, not only as to Age, Riches, Warlike Science, but likewise on account of their Arms, and way of Fighting; for of the younger and poorer sort they made their *Velites*, those that were somewhat above them, upon the account of their Age and Riches, were *Hastaries*, (or Halberdiers) such as were richer, and in the full Vigour of their Age, were *Princes*; and the oldest and most experienced were the *Triaries*. The Number of the Soldiers of every one of these different sorts, was different in several times, according as the Legion was less, or more Numerous. When the Legion did amount to 4200, as it did in *Polybius's* Time, there were 600 *Triaries* in the Legion, and 1200 of every one of the three other sorts, to wit, of *Princes*, *Hastaries*, and *Velites*; when the Legion was more Numerous, those three different sorts were likewise encreased, the *Triaries* only excepted, who were always the same Number. The *Roman* Battalia were ordered after this manner, where-

Ha	s	t	a	ti.
Pr	in	ci	pes.	
Tr	i	a	r	ij.

in

in consisted the Strength of the *Roman* Battel. By this Ordination they readily fell into each other; the *Hastati* being pressed, handsomly retired into the Intervals of the *Principes*, these into that of the *Triarii*, which making as it were a new Body, might jointly renew the Battel, wherein consisted the *Secret of their Successes*. It was remarkably singular in the Battle of *Africa*, that *Scipio* fearing a Rout, from the Elephants of the Enemy, left not the *Principes* in their Alternate Distances, whereby the Elephants passing the Vacuities of the *Hastati*, might have run upon them, but drew his Battle into right Order, and leaving the Passages bare, evaded the Mischief intended by the Elephants.

There were two remarkable Forms of Battle, the *Cuneus* and *Forceps*, or the Shear and Wedge Battles, each made of half a *Rhombus*, and but differenced by Position. The Wedge invented to break or work into a Body, the *Forceps* to environ and defeat the Power thereof, composed out of select Soldiery, and disposed into the form of an V, wherein receiving the Wedge, it enclosed it on both sides. After this form *Nasses* ordered his Battel against the *Franks*, and by this Figure the *Almans* were enclosed and cut in pieces.

Battalia in form of
an V.

The *Rhombus*, or Lozenge Figure, was the form of Battel in the *Grecian* Cavalry, observed by the *Thessalians*, and *Philip* King of *Macedon*, and frequently by the *Parthians*, as being most ready to turn every way, and best to be commanded, as having its Commanders at each Angle.

Battalia in form of
a 

The *Macedonian Phalanx* (a long time thought invincible) consisted of a long Square. For tho' they might be 16 in Rank and File, yet

Battalia in form of
a 

yet when they shut close, so that the sixth Pike advanced before the first, though the Number might be square, the Figure was oblong, answerable unto the Quincuncial Quadrate of *Curtius*. According to the Square *Thucydides* delivers, the *Athenians* disposed their Battle against the *Lacedaemonians* Brickwise, and by the same word the Learned *Guelius* expoundeth the Quadrate of *Virgil* after the form of a Brick or Tile.

The Description
of the Battering
Ram anciently
used in War.

The R A M (an Engine to batter down the Walls of Cities) anciently used in the Wars, was made of a great Tree, or Beam, like unto a Mast of a Ship, having a piece of Iron in manner of a Ram's Head, fastened at the end thereof; wherewith they did demolish and batter down the Wall. It was hung upon a Beam which lay cross over a couple of Pillars, and hang'd thus, equally ballanced, that being by force of Men pull'd backwards, it might recoil upon the Wall. The Rams which *Titus* used at the Siege of *Hierusalem*, ran most upon Wheels, which are described by *Josephus*. There be, saith he, other manner of Engines, as an Iron Ram upon four Wheels bound with Iron, and fastened with Iron Nails; to this they make four Feet, answerable to the bigness of the Beam, and every Foot hath his several Wheel, and when they did batter the Wall, certain Men first pulling it back, they recoil it by the help of four wooden Levers, put in the hinder part thereof for that purpose. The Head of this Ram had no Horns, but was blunt, and made of the strongest kind of Iron, with a wonderful thick Neck; they had also of both sides of the Ram a Penthouse of Wood for the Safeguard of those that recoil it. See the *Roman History*, p. 265.

In

In this Age an Army is drawn up in Battle in three Lines, and the *French* divide sometimes every Line into several little Bodies; the *Turks* give sometimes to their Army the Figure of a Crescent, which form is also often in a used Fight at Sea.

The Armies now are not always divided into Parts made up of the same Numbers; for some Regiments have 10 Companies, others 15, others 20, &c. Likewise the Companies have not always the same Number of Men, some being 100, others 120, others 150, &c.

A Battallion commonly consists of 500 Foot.

A Squadron commonly is a small Party of Horse of about 150.

The Camp, especially if the Enemy be near, ought to be in some Place where there is a great Plenty of Water and Provisions; and if the Army is to make any long stay, 'tis requisite to observe whether the Air be good. Take care not to encamp near a Hill, (unless you secure it for your selves) which being taken by the Enemy, may incommode the Camp.

Tho' Courage be altogether necessary to a Soldier, as I shall speak sufficiently of presently, yet 'tis good Policy in War, to let an Enemy have opportunity to retire; the want of which made *Charles VI.* of *France* lose his Army by Intercepting our *Henry V.* *John* of *France*, by surrounding our *Black Prince*, with his Army, met with an Overthrow. *Themistocles* would not let *Xerxes's* Bridge across the *Helespont* be broke, lest the *Persians* should be compelled to fight, and happen to recover all they had lost. Our *William* the Conqueror burnt his own Navy, to make the Soldiers rely

See the Citizens of *London's* Answer to King *Edward II.* in our *Chronology*. p. 224.

ly upon their Courage. *Tariff*, the Leader of the *Moors* into *Spain*, did the like. The *Persians* enclosing the *Grecian* Navy, were by the *Greeks* defeated. So *Themistocles* advised *Xerxes* to get between the *Spartans* and their Country, which he did, and compelling them to fight, met his own Overthrow. This was designedly done by *Themistocles*, who fearing the *Spartans* would leave their Allies, the *Athenians*, at the sight of so prodigious an Army as *Xerxes* brought, advised him to compel them to fight, which he thought would have the Success it met with.

Of several Inventions in the Art of War, see in the Treatise of *INVENTIONS*.

EXERCISE of the SOLDIERY.

Exercise of the
Soldiery.

In Teaching the Posture Arms to every single Soldier, you must use the Words hereafter, but when you come to Exercise the whole Company together, you may at some times, for your own Satisfaction, in the more ready and graceful Performance of them, command the Postures to be done by the whole Number at once, with such Pause between every Posture, as may afford you means to discern any failure therein. And so One, Two, or more Regiments may be Exercised by deliberate Strokes on a Drum, or streaming a Flag round in the Air.

The whole Company is to be divided into Files, each File consisting of 10 Men; the Men in the File may be distinguished by the Names of *Leaders*, *Bringers-Up*, and *Middle-Men*. The two Seconds, the two Thirds, the two Fourths, by the joyning of Files, Ranks are formed, which do follow the Dignity of each place in one File.

1. Rank,

1. Rank, of *Leaders*.
2. Rank, of *Bringers-Up*.
3. Rank, of *Middle-Men* to the Front, is the sixth Rank from the Front.
4. Rank, of *Middle-Men* to the Rear, is the fifth Rank to the Front.
5. Rank, is the second to the Front.
6. Rank, is the second to the Rear.
7. Rank, is the third to the Rear.
8. Rank, is the third to the Front.
9. Rank, is the fourth to the Front.
10. Rank, is the fourth to the Rear.

General WORDS of COMMAND.

Stand to your Arms.

Silence.] Which be sure to have performed, or there will be Confusion.

General Words
of Command.

Stand right after your Leaders, or File Even.

Stand Even with your Side-Men, or Rank Even.

In your Order.] That is, Files three Feet asunder, and the Ranks six Feet.

In your Open Order.] That is, Files six Feet asunder, and Ranks twelve Feet.

In your Close Order.] That is, Files a Foot and a half asunder, and Ranks three Feet.

Closer than this the Musqueteers must never be, but the Pikes, when they are to give or receive a Shock are to be commanded.

But Pikes are now
disused.

Pikes in your Close Order, or Pikes Close.] Then the Ranks must Close unto the Rapier or Swords Point of their *Leaders*. If the Words *Files* and *Ranks* be not expressed, then must the Soldier understand both are meant; but sometimes the Command is,

Files in your Open Order, and Ranks in Order.] Which is six Foot square.

Files

Of the Military Art.

Files in Order, and Ranks in Close Order.]
Which is three Foot square.

Open your Ranks.] Which is always backwards from the *Leader*.

Close your Ranks.] Which is always done forwards.

Open your Files.] If no hand expressed, then indifferently to both.

When you Exercise Embattelled, the Captain must for his Place be in the Head or Front of the Pikes; the Lieutenant in the Rear; the Ensign in the first Rank; the Sergeants in the Flanks; the Drums on the Corners. The Drum must be used to beat a March in three Measures, *viz.* the Slow, the Mean, and the Swift, so as the Soldiers may proportion their Pace accordingly, which indeed depends on the Captain's Word.

The *Leaders* must turn and pass along by their *Files* 'till they come to the Place where their *Bringers-Up* stood, the rest must march up to that Ground where their *Leaders* at first stood, there turning, follow until the *Bringers-Up* be in the *Leaders* places.

To the Right Hand.

To the Left Hand as you were.

To the Left Hand.

To the Right Hand as you were.

To the Left Hand about.

To the Right Hand as you were.

Files to the Right Hand double.

Files as you were.

Files to the Left Hand double.

Files as you were.

Rank to the Right Hand double.

Rank to the Left Hand as you were.

Middle-Men to the Right Hand double the Front or Ranks.

Middle-Men to the Left Hand as you were.

Middle-Men to the Left Hand double the Front or Ranks.

Middle-Men to the Right Hand as you were.

Middle-Men by Division double the Front.

Middle-Men as you were.

Wheel to the Right Hand.

In Wheeling, the Right Hand corner Man must stand firm, the Left corner Man must move forward, and every *Leader* after him successively, keeping the same distance exactly which they had before they moved. The same way of proceeding (the Hand changed) serves for

Wheel to the Left Hand.

Wheel about to the whole Body.

To Increase the Ranks, the second Rank must come up into the first, and so onward.

POSTURES for the PIKE.

1. *Order your Pikes.*
2. *Advance your Pikes.*
3. *Shoulder your Pikes.*
4. *Charge your Pikes.*
5. *Order your Pikes.*
6. *Traile your Pikes.*
7. *Cheek your Pikes.*
8. *Charge your Pikes.*
9. *Shoulder your Pikes.*
10. *To the Right Hand Charge.*
11. *Shoulder your Pikes.*
12. *To the Left Hand Charge.*
13. *Shoulder your Pikes.*

Postures for the
Pike.
Pikes are now
disused.

Q

14. To

14. To the Rear Charge.
15. Shoulder.
16. Port your Pikes.
17. Comport your Pikes.
18. Order your Pikes.

The POSTURES of the MUSKET.

Postures of the
Musket.
Rests and Match-
Locks out of use.

1. March with your Musket, and Rest shouldered.
2. Prepare your Rest.
3. Slip your Musket.
4. Poise your Musket.
5. Joyn your Rest and Musket.
6. Take out your Match.
7. Blow your Match.
8. Cock your Match.
9. Try your Match.
10. Guard your Pan.
11. Blow your Match.
12. Open your Pan.
13. Present.
14. Give Fire.
15. Recover your Musket.
16. Uncock your Match.
17. Return your Match.
18. Clear your Pan.
19. Prime your Pan.
20. Shut your Pan.
21. Blow your Pan.
22. Cast off your loose Corns.
23. Cast about your Musket.
24. Traile your Rest.
25. Open your Charge.
26. Charge your Musket.
27. Draw out your Scowring-Sticks.
28. Shorten your Scowring-Stick.
29. Ram your Powder.

30. With-

30. *Withdraw your Scowring-Stick.*
31. *Shorten your Scowring-Stick.*
32. *Return your Scowring-Stick.*
33. *Bring forward your Musket.*
34. *Recover your Rest and Musket into their first Posture.*

The Musket being ordered,

1. *Shoulder your Musket.*
2. *Order your Musket.*
3. *Prepare your Cock.*
4. *Make ready.*
5. *Present.*
6. *Give Fire.*

All the foregoing Postures of the Musket upon Service are reduced into three, as when you Skirmish, viz. 1. *Make Ready*, 2. *Present*, 3. *Give Fire*.

In Skirmishing, those that are in the Front having fired, divide themselves, and wheel round into the Rear, where they make ready to fire again; when the others having fired are wheeled round behind them, so that they come into Front again.

In the Line of Battle, the Soldiers, after the first Word of Command for Firing, wait no more, but Charge as often as possible, not ramming the Powder and Ball down, but knocking their Musket-Butt against the Ground, shoot one time after another, as fast as they can, taking their Aim little more than Knee high, the Balls being always apt to mount in Firing.

Tho' Art and Discipline be necessary to a Soldier, yet is Courage of main Concernment, no Man in Arms being ever Valiant, or wor-

*Courage necessary
in a Soldier.*

How to Infuse
(and Exhaust) all
the Courage of
another Man into
thy self, see at
the end of our
Agriculture.

Small Armies Con-
querors.

In *Germany* anci-
ently no Man was
to Marry, till he
had brought the
Head of a slain
Enemy before the
King.

A fine Horse be-
ing commended
to the Emperor
Probus, for that
he could go a
Hundred Miles a
day, eight or ten
days together,
said, He was fit-
ter for a Coward
than a Valiant Sol-
dier.

thy to Command, that hath not a Courageous
and Bold Heart, by which a few Men have
often been the Destruction of great and pow-
erful Armies. For Historians make mention,
that

Miltiades, the *Athenian*, with 11000 over-
threw *Darius*, King of *Persia*, who had
600000.

600 *Laplanders* once put 100000 *Muscovites*
to the Rout that came to Invade them.

Themistocles, with a small Number, over-
came 700000 Foot and 300000 Horse, brought
into *Greece* by *Xerxes*, King of *Persia*, who
escaped by Flight in a little Fishing-boat.

In 1663. Count *Serini*, with 500 Men, over-
threw 30000 *Turks* and *Tartars* near the Ri-
ver *Meur*.

Belisarius with 5000, overcame 50000 *Van-*
dals.

Scevo, a Valiant Man, so long resisted *Pom-*
pey's Army, that he had 220 Darts sticking in
his Shield.

Claudius, a Captain of *Recaredus*, King of
Spain, with 300 Soldiers, put to Flight 60000
that came into *Spain* to the Succour of the *Ar-*
rians.

Horatius Cocles resisted the whole Army of
King *Porfenna* on the Bridge *Pons Sublicus*,
while the Citizens broke down the Bridge be-
hind him, and then plunging himself in, swom
to his Friends, who received him with joyful
Acclamations.

Abderama, the *Moor*, entring *France* with
450000 *Saracens*, was defeated by *Charles Mar-*
tel, who with the loss of 1500 Men, flew 375000
Saracens.

11800 *English*, got the Victory over 70000
French at *Cressy*.

Edward

Edward the Black Prince, with 8000, vanquished 40000 French at the Battle of Poitiers.

Our Henry V. with 15000, beat 52000 French.

Alexander the Great with Handfuls, conquered the World.

Cynogirus having his Hands cut off, bit with his Teeth the Arms and Ships of his Enemies. Sergius fought four Times with his left Hand (which Pliny sets down as a Prodigy.)

Sicinnius had been in an 120 Combats, bearing away 36 Spoils of his Enemies, and 45 Wounds of his own. Scanderbeg, in seven Battles, flew 2000 Men with his own Hand. The Turks took him out of his Tomb, and wore his Bones for Jewels, thinking they would empower the Bearer with Conquest over his Enemy. Boadicea, Queen of Britain, defeated the Roman Consul. Margaret, Wife to our King Henry VI. beat that Army which had conquered her Husband's Forces.

Venice held for seven Years a War against all the Princes of Europe.

The City of Bizantium, afterwards called Constantinople, once held out a Siege of three Years against almost all the Forces of the World: They were in such Streights for Food, that Men meeting in the Streets, would, with joynt Consent, fight, the Victor to eat the Vanquished; and for want of Artillery, they flung Statues at their Enemies, &c.

The City of Troy held out a Siege of 10 Years.

The City of Riga, Anno 1656. repulsed 100000 Muscovites.

Cleomenes was so inveterate to Cowardise, that the Spoils he won from Cowards, he would neither Sacrifice to the Gods nor let the Lacedæmonian Youth behold them.

Famous Sieges.

Ostend in *Flanders*, once held out a Siege of above three Years.

Numantia, in *Spain*, with 4000 Soldiers, withstood 40000 *Romans* for 14 Years.

The People of *Gaunt* rebelling against the Count of *Flanders*, their Sovereign, and being blocked up on all sides, issued desperately out of the Town with only 5000, and overthrew the Count with 40000 Men, pursuing him to *Bruges*, whence he escaped in the Night, and almost all the Towns in *Flanders* yielded to them.

Toledo, in *Spain*, held out a five Years Siege, from *Anno* 1080.

The little Cittadel of *Nice* repulsed a Navy of 200 Sail, *Anno* 1543.

Scudaria, a little Town in *Dalmatia*, held out a Years Siege against *Mahomet II*.

Algiers once held out a Siege of seven Years against *Joseph* the Puissant, King of *Fez*, who was then forced to raise it. (This *Algiers* is now demolished.)

The *Lacedaemonians* thought the chief Strength of a Town to consist in the Valour of the People, and therefore would not suffer *Sparta* to be walled 'till the Death of *Alexander* the Great, who conquered them.

The *Lacedaemonians* employed in a War 20 Years, sent young Men home to accompany their Wives, and preserve their Families.

The Women of *Curzola* being forsaken by the *Venetian* General, Townsmen, and Soldiers, when invaded by *Uluç Ali* with a Navy of 60 Gallies, took Stones, Fire, and such like Weapons they had, with which they beat off the Enemy.

Emanuel Caballo, a *Genoese*, when the City of *Genoa* was Besieged by the *French*, and reduced to Want, a Ship with Provisions arriving, sail'd to the Cittadel, not knowing the *French* were Masters of it, and so fell into the Enemy's Hands, whereupon they were all for surrendering; 'till *Caballo*, with one Ship only, and

and a Number of Valiant young Men, sailed towards the Cittadel, receiving the Shot of the *French* on all sides, and maugre all Opposition, cut the Cables, and rescued the Ship, to the Wonder of all Spectators, and the great Joy of his Country-men; which Action has procur'd him the Name of the *Immortal Deliverer of his Country*.

The first begining of Triumphs. See *Games*, Vol. I. p. 102.

And here it may not be improper, in relation to the Subject, and satisfaction of the Reader, to add a Collection of some other of the most famous and remarkable Battles that have been fought throughout the World.

Other FAMOUS BATTLES.

A. M. 373. *Brennus*, with his *Gauls*, overthrew 40000 *Romans* near the River *Allia*, and marching to *Rome*, was after vanquished by *Camillus*.

Famous Battles.

A. V. C. 640. A Battle was fought between *Marius* and *Jugurtha*, King of *Numidia*; which last lost the Victory.

Of the Battle between King *Acron* and *Romulus*. See Vol I. p. 102.

Between *Marius* and the *Cimbri*, whom he set upon marching (divided into three Parts) thro' the *Alps*, and conquered them, being 300000 fighting Men.

Between *Marius* and *Sylla*, who killed 12000 Citizens of *Præneste*.

About A. M. 380. Between *Hannibal* and the *Romans*, the first at the River *Trebea*, the second near the Lake *Trasimene*.

Between *Hannibal* and *Marcellus*, which last got the Victory; fought at *Nola* in *Naples*.

Between *Hannibal* and *Flaminius*, which last had 15000 of his *Romans* slain; fought near the Lake *de Perugia*.

Of the Military Art.

Between *Hannibal* and the *Romans*, near the Village *Cannæ* in *Naples*, where he killed 42700 *Romans*.

A. C. 477. Between the *Romans* and King *Hieron*, allied to the *Carthaginians*, being the First *Punick War*.

Between *Attila*, King of the *Huns*, and *Ætius* the *Roman General*, where were 10 Kings present, and 200000 slain; fought near *Tholouse* in *France*.

Between *Roderick*, the *Gothish King*, with 130000 *Foot* and 35000 *Horse*, and *Tariffe* (Leader of the *Moors* into *Spain*) with 30000 *Horse* and 180000 *Foot*; the *Battle* lasted seven days, the *Moors* getting the *Victory*.

Between *Vitellius* and *Vespasian*, at *Cremona*.

Between *Anthony* and *Augustus Cæsar*, near *Perugia*.

Between *Asdrubal* and the two *Consuls Livius* and *Cl. Nero*, where 56000 *Carthaginians* were slain near the River *Metaurus*.

Between the *Spartans* and the *Thebans*, who overthrew the *Spartans* in the *Parapagian Plains*.

Between *Pompey* and *Mithridates*, who was vanquished at *Angyra*.

Between *Bajazet* and *Tamerlane*, who was Conqueror at *Angyra*.

Between *Attalus* and the *Galatea*.

Between *Aretus*, King of *Arabia*, and *Alexander*, King of *Jewry*, who was conquered at *Adada*.

Between

Between *Ventidius Bassus* and the *Parthians*, who were vanquished at *Pyla Cilicia*.

Between the *Soldan* of *Egypt* and *Bajazet II.* at *Pyla Cilicia*.

Between *Alexander* the Great and *Darius*, King of *Persia*, who lost 400000 *Persians*, near *Schiabrazur* in *Asia*.

Between *Rich Crassus*, who with 30000 of his Men, was slain, and *Pbraartes* the *Parthian*.

Between *Artaxerxes* and *Cyrus* for the *Persian* Crown, at *Caramon-Sbasphoon*.

Between *Tigranes*, King of *Armenia*, with other Kings his Confederates, having 220000 armed Men against *Lucullus* the Roman, who had not above 12 or 13000 Horse and Foot, yet got the Victory, with the loss only of 5 Men killed and 10 hurt.

Tigranes jested at him, saying, If he came as Ambassador, he had many Men, but if to fight, very few.

Between *Basilius* the Great Duke of *Muscovy*, with 80000 Men against the *Polonians*, whom he let pass over a River, when he might have had them at a great Disadvantage, bragging he would let them pass over, that he might drive them all before him like Beasts into *Muscovy*; but they got the Victory, killing 40000 *Muscovites*, and taking 5000 Prisoners.

Between *Tamerlane*, Vice-Roy of *Tartary*, and *Thucstamysh*, Emperor of *Serai*, who was defeated twice, the last Battle continuing three Days.

Between *Semiramis*, the *Assyrian* Empress, and *Staurobates* an *Indian* King, having each an Army of above three Millions, (if *Ctesias* and *Diodorus Siculus* say true) which last got the Victory.

Between

Of the Military Art.

Between *Alexander* and *Porus*,
King of *India*.

Between *Massinissa* and *Asdrubal*,
at *Thresdus* in *Barbary*.

Between *Cæsar* and the Sons of
Pompey, at *Munda*.

Between *Sertorius* and *Pompey*, at
Cullera in *Spain*, where *Pompey* was over-
thrown.

Between the *Romans* and *Pyrrhus*,
King of *Epire*, near *Ascoli*.

Between *Attilus* and *Æmilius*, who
got the Victory, with the Slaughter of 40000,
and 10000 Prisoners, near *Telamon* in *Tus-
cany*.

Between the *Carthaginians* and *Ca-
tullus*, fought in *Sicily*.

Between *Hunniades* and the *Turks*,
whom he set upon by Moon-Light, with
10000 Horse, killing 30000 *Turks*, and
taking 40000 Prisoners; fought near the
River Morava in *Spain*.

Between *Hunniades* and the King
of *Hungary*, who got the Victory near *Varna*.

Between the Emperor *Claudius* and
the *Goths*, between whom were fought sever-
al Battles near *Mercianopolis* in *Bulgaria*.

Between *Mahomet III.* and *Mi-
chael Vaivod* of *Walachia*, who got a remark-
able Victory near *Nicopolis*.

Between *Cæsar* and *Pompey* in the
Pharsalian Fields in *Thessaly*.

Between *Augustus* and *Anthony* for
the Empire of the World, at *Actium*.

Between *Darius* and *Miltiades*,
who got the Victory at *Marathon* in *Attica*.

Between

Between the *Lacedæmonians* and *Pelopidas* and *Epamonidas*, who got their Victories at *Leuctra* and *Mantineæ*.

Between the *Grecians* and *Persians*, whose General was *Mardonius*, slain with 160000 *Persians*, and of the *Grecians* but 699.

Between *Herculeius*, Treasurer of *Sertorius's* Army, and *Manilius*, Proconsul of *Gallia*, who lost his Army, fought near *Lerida* in *Spain*.

Between *Cæsar* and *Vercingetorix*, King of the *Avernians* at *Alexia* in *France*.

Between the *Cratonians* and *Locrians*, where 120000 *Crotonians* were overcome by 15000 *Locrians*.

Between *Rowland* and *Oliver*, at the Head of 20000 *French*, who were routed by the *Moors* near *Roncevalles*.

A. C. 173. Between *Aurelius* with his Legion of *Thunderers*, (the *Christians*) who had prayed and prevailed with Heaven, to discharge a Tempest upon his Enemies, the *Macronians*.

A. C. 198. Between *Severus* and *Albinus*, who lost the Victory, the Battle being so bloody, that the River *Arar* changed its Colour, and was called *Sangone*, now *Saone*.

A. C. 732. *Charles Martel* discomfited the *Saracens* of about 450000, killing near 375000.

A. C. 1030. Between *Trangolipix* and the *Persian* Sultan, who was overthrown by the *Turk*.

A. C. 1099. Between *Godfrey* of *Bulloigne*, at the Head of 300000 *Christians*, and the *Turks*, who lost the Victory at *Ferusalem*.

A. C. 1139. Battle of *Obrigue*. See *Kings of Portugal* in *Chronology*, and the *Arms* of the *King of Portugal* in *Heraldry*. A. C.

- A. C. 1509. Between *Albuquerque*, the Victorious *Portugal*, and *Idulcan*, fought at *Goa* in the *Indies*; *Idulcan* having brought 70000 Foot and 3500 Horse to reduce *Goa*.
- A. C. 1514. Between *Selim* and *Ishmael Sophi*, who lost the Battle, that had always been Victor before, fought in the *Candaran Plains*. This is called by the *Turks* the Battle of *Doomsday*. See famous Paintings in PAINTING.
- A. C. 1571. Between the *Venetians* and the *Turks* in the Sea near *Lepanto*, where 29000 *Turks* were killed, 4000 taken Prisoners, with 140 Gallies, and 1200 Captive Christians redeemed.
- A. C. 1578. Between the *Christians* and the *Turks*.
- A. C. 1620. Between *Frederick*, Prince Palatine of the *Rhine*, and the Emperor *Ferdinand II.* who got the Victory.
- A. C. 1624. 40000 *Tartars* entring *Podolia*, were overthrown at *Burstinow*, 3000 being slain, and 2000 taken Prisoners.
- A. C. 1632. The Battle of *Lutzen*.
- A. C. 1648. The Battle of *Lens*, where the *French* got the Victory, taking 6200 Soldiers, 40 great Guns, 90 Ensigns, &c.
- A. C. 1664. The *Christians* got a Victory over the *Turks*, near the River *Raab*, where 8000 were slain, and all the rest almost drowned.
- A. C. 1683. At *Vienna*, then besieged by the *Turks*, who lost, during the Siege, and in the Battle, 90000 Men, being totally defeated by *John*, King of *Poland*, the Dukes of *Bavaria*, *Saxony*, &c.
- A. C. 1684. 60000 *Turks* and *Tartars* received a Defeat by the *Polish* General, with 2500 Horse.
- A. C.

A. C. 1684. Duke of Lorrain, fought with 20000 Turks, and got a Compleat Victory, taking 18 Standards, 1500 Prisoners, &c.

A. C. 1691. The bloody Fight at Agrim in Ireland, in which the Irish Army was defeated; after that Gallway, Limerick, &c. surrendered upon Conditions.

A. C. 1692. A Terrible Sea-Fight between the French, and English and Dutch Fleets, on the 19th of May; wherein the French were beat.

A. C. 1692. August the 3d, the Terrible Battle of Steenkirk in Flanders.

A. C. 1694. The bloody Fight at Landen in Flanders.

A. C. 1705. Duke of Marlborough overthrew the French and Bavarians, and took 11000 Prisoners.

A. C. 1707. Duke of Marlborough won the Battle of Ramelies.

See more in the Chronology of England, Germany, France, Spain, Portugal, &c.

CASTLES and TOWNS that have been esteemed Impregnable.

1. Boisseduc in Spanish Flanders.
2. Candia in the Isle of that Name.
3. Coeverden in the United Provinces.
4. Casal, belonging to the Duke of Mantua.

5. Croia in Greece.
6. Elsingburg Castle in Denmark.
7. Faicza in Dalmatia.
8. Leghorn in Tuscany, the strongest City in the Mediterranean.

9. The Castle of Lacedæmon, never taken, as Histories say.

10. Messina

The most famous Massacres have been
 1. The general Massacre of the Men at Cappadocia, whose Widows were the Amazons. 2. The Massacre of a Hundred and fifty Thousand Roman Soldiers dispersed in Anatolia, all in one Night. 3. The Massacre of the Danes in England on St. Brice's Night, 13. Nov. Anno 1002. 4. The Massacre of Chabriers and Merindol in France, Anno 1545. 5. The great Massacre at Paris, Anno 1572. 6. Of Sicily, called by the Name of the Sicilian Vespers. 7. Of the Protestants at Ulster in Ireland, 23. Oct. 1641. &c. And here I cannot omit the memorable false Alarm of an Irish Massacre, Decem. 12 1688. which run all over the Kingdom.

Castles and Towns that have been esteemed Impregnable.

10. *Messina* in *Sicily*.
11. Castle of *Manfredonia* in *Naples*.
12. Castle of *Milan*, yet hath the City been besieged 40, and taken 22 times.
13. *Mons* in the *Spanish Flanders*.
14. *Montmelian* in *Savoy*.
15. *Macao* in *China*.
16. Cittadel of *Nice*, or *Nissa*.
17. Castle near *Onwari* in *Japan*.
18. *Rotas* in the *Mogul's Empire*.
19. *Zara* in *Dalmatia*, and
20. *Dunkirk*, which tho' last named, perhaps better deserves the Name of being *Impregnable* than ever did any of the foregoing. And in the Parliament of *Great-Britain*, Mar. 1709. Mr. Secretary *Boyle* made a Motion for the insisting in the ensuing Treaty of Peace, that *Dunkirk*, with its Fortifications and Harbour, be demolished, which was unanimously approved.

Note, The Modern way of Exercising is so well known, that I purposely chose to give you that of the last Century, which does not much vary in the Exercise of the Musket it self.

A U T H O R S,

Polybius, *Stevin*, *Herigone*, &c. *Orrery's Art of War*, *Machiavel. Art da la Guerre*, *Instruction pour le Gens de Guerre*, &c. *Science Militaire*, French. *Monroe's Expedition for War*. See *Grotius's Right of Peace and War*.

Of FORTIFICATION.

MILITARY Architecture, or the Art of Fortification, is of great Moment for the Defence of Countries, and Offence of Enemies; for this Art teacheth how to build a Fortrefs, Works, &c. in such a manner, that the Enemy, on what side soever he makes his Approach, may be beat back by the lesser Number.

Every Point of the Circumference of your Fortrefs, &c. must be defended by some other Part of the same; and your Works require to be Flanked, to keep the Enemy from a sudden Entrance, where any Breach is made by the great Guns; for if the Besiegers have made their Approaches so near, that the Besieged's Cannon in the Front are dismounted, then you may be assured their Design is to put their Miners to pass the Ditch; and then if they perceive any Place out of sight of the Besieged's Firing, they will have an Opportunity to make their Mines with less difficulty; so that a Place, unless the Garrison be very large, to make frequent Sallies, may be taken in 8 or 10 Days; that with Flankers might hold out much longer: So that it has been the Practise of late, to turn the ancient round Bastions into sharp pointed ones, which not only, upon occasion, serves for Flankers to defend against any hasty Approach, but to flaunt and hinder the Force of the great Shot playing against the Town or Fort.

The great Line of Defence is to be considered (amongst other Things necessary on this occasion) or what may be found near equal unto

The Polygon.

See in our Geometrical Definitions in Geometry.

unto it, *viz.* the *Polygon Interior*, which in most Cases ought not to exceed 120 Fathoms, or 720 Feet; and this is found to be a Point blank of the Execution of a Musquet, the Cannon being here incommodious, and therefore the Defence is to be taken from the former, the latter, besides the Waste of Ammunition, lying much liable to be dismounted, and not so easily again remounted, as the Emergency requires, and the Difficulty is likewise greater in maintaining a continual Fire, and if their Work be not incommoded by their over-largeness, the more capacious the Gorges and Flanks are, the better will the Fortification be found for Defence, for then the Soldiers may pass to and fro in a good Front to the Bastion, when Cannon are planted on both sides the Flanks, and give no Interruption to those that are at the Flanks; and if there be but a supposed Necessity required, there must be a Vacancy left for Retrenchments, and a Place under the Bastions left fit for Mining, that if it come to Extremity, when you have drawn off, as soon as the Enemy hath possessed the Bastion, it may be blown up, and their Attack cleared 'till the Besieged may know what is further to be done in the Defence of the Place, and draw their Strengths thitherto from other Parts.

Counterescarp.

Above all, the Curtains, Flanks, and Faces of the opposite Bastion, are to be well secured and guarded, as likewise the Ditch and Counterescarp being made as large as the due Proportion of the Bastion will allow; for if they be too great their Capitals will be found to be too long, and thereupon the Defence-Line exceed the Port of any Musket or small Piece, and being too little they will become blunt,
and

and so cut off the second Flank, whilst it ought to be held considerable.

The Degrees of the Angle of a Bastion ought not to be less than 60, or more than 90, some small matter allowed over or under; and the reason is, if it be much under 60, it will be found too slender, or above 90, too large, or more than may well be supplied; and moreover by that the second Flank is shortned, and it will be computed in less Ground than the Bastion, where it is an Angle of less Degrees, tho' built on the like Gorge and Flanks; and observe in all your Works to let them be Cannon-Proof.

The Degrees of the Angle of a Bastion.

According to the *Dutch* Method of Fortifying, the Angle of the Bastion, or the flanked and defended Angle, exceeds always by 15 Degrees the half of the Angle of the *Polygon*: Upon this Account 'tis that the Angle of the Bastion is never straight, or of 90 Degrees, unless in a Place defended by 12 Bastions, but in Places defended by more than 12, it is always straight.

Dutch Method of Fortification.

According to the *French* Method, if the *Polygon* be a Triangle, the Angle of the Bastion contains 45 Degrees; if it be a *Pentagon*, or of 5 Angles, it contains 78 Degrees; if the *Polygon* have more than 5 Sides, the Angle of the Bastion is straight, or is open 90 Degrees.

The French Method.

If we proceed to a Description of Regular Fortification, it is to be understood of such Models as are equally Angular, and founded upon Equilateral Figures, to be described in a Circle, as it may be a Triangle, Quadrangle, or a Quartile *Pentagon*, or a Figure of 5 Sides to a *Dodecagon*, or a Figure of 12 Sides; and in this Case the Bastion must be so posited, that all the Points may answer in like distance

Regular Fortification.

stance from the Center. The Curtains of equal length, and all the Angles and Lines to be of an equal magnitude; for Regular Models are to be computed from a Calculation of the Angle at the Center, and that is done by dividing 360, the Number of the Degrees that a Circle is usually divided into, and wherein the Regular Figure is to be described by the Number of any *Polygon's* Sides, or the Regular Figure that any Fort or Work of War of this Nature is to consist on; for hereby the Quotient demonstrates the Angle of the Center, as may be demonstrated by a Figure of five Sides, wherein, by Operation, the Angle of the Center is certain to be 72 Degrees, and the like of any other Figure; then if you draw a Circle with the Protractor, or Line of Chords, the first being a Semi-Circle, and the last the half part of a Semi-Circle, or 90 Degrees projected on a straight Line, and the Angle be set off at the Center at 72 Degrees, the Circle will thereby be divided into five equal Proportions, or Parts, and the straight Line drawn to the Points produces a *Pentagon*. Besides this Model of Fortification, there are sundry Outworks required for strengthening a Place, they hindering much the Besiegers from making their Lodgments, if the Ground happen to be low near the Counterscarp, or from suddenly raising Batteries by the Advantage of that Ground, if it happen to be high; wherefore a careful Engineer always provides Outworks to hinder it, and prolong the Approaches to the Main Fort; and these Outworks are various, as the Situation of the Place, or Danger requires.

Ravelins

Ravelins are an usual Outwork, of which are usually two forts, one with Lines, and the other without. The First of these are placed before long Curtains, where the Two Bastions are not capable of flanking each other within Musquet-shot; and the Length of the Curtain not sufficient for the Erecting a Plate-Bastion in its Centre, and supply the Defect of a Bastion by covering and defending. And to erect these Kinds, the Ditch must be cut Parallel with the Curtain, and above it erect a Capital from 18 to 20 Poles, and let your Demigorges be no more than from 10 to 12 Poles the Flanks, from 8 to 10 the Ditch, surrounding them, and the Greatness of the Flanks Parallel to the Face of the *Ravelin* till the Ditch of the Place of the Face of the Bastion be met by it, that so the *Ravelins* Flanks may scoure over all the Ditch that faces the Bastion. *Ravelins* without Lines consist only of a Capital and two Faces, the Capitals from 12 to 18 Poles the Face edging or drawing nearer to the Shoulders of the Bastion, that within the *Ravelin* may be commanded by the Curtain and two Flanks.

The *Half-Moon* is a Work always raised before the Bastion's Point, being so named from the Lowness of its Gorges Cavity, &c. and is to secure the Two Faces of the Bastion; but when the Faces have but a weak Defence from the *Ravelin*, these Works are soon made useless or ruined, and give the Besieged an opportunity of Lodgment, and may serve for Batteries and Flanks against the opposing Bastions; however they may be retrenched by Traverses, yet they will not fail to attack entirely in the Face, or where you have your last Retrenchment, also that called the Counterguard runs the like Hazard.

Hornworks.

Hornworks are also Outworks placed before the Curtains, a Perpendicular Line being drawn from it at the two Flanks about 60 Pole Front towards the Campaign, their Front to be 36 Poles equal to the Curtain, to be divided into 3 Parts, one of them for the Curtain, and the other for the Demigorges appertaining to the *Hornwork*: As for the Flanks, they are to be 6 Rods or 72 Foot each. And this Work is held to be one of the best and strongest Outworks, if well manned and managed, especially when a *Ravelin* is placed before it.

Tenails.

The *Tenails* is an Outwork that is built to secure the Bridge when it is hard pressed upon their Sides, containing 50 Poles, and the Fronts no more than 36; which being divided into 4 equal Parts, a Perpendicular is drawn in the Middle, whereon a $\frac{1}{3}$ of the Front is set off inwards towards the Town, and the Lines must be drawn from the Sides to Form the Face: This Work is advantageous for Counter-Approaches, and for receiving Succours into the Town.

Crownwork.

The *Crownwork* is usually erected when a Heighth is so near to the Place that a Musquet-Shot may reach it, and then the Sides of the Works must be extended before the Bastion or Curtain about 65 Poles, and the Demi-bastions point to be about 60 Degrees, then the Extremities of the Sides must be joyned, and a Perpendicular Line raised on the Middle on which fix for the Capital 18 Rods making an Angle of two Inferiour Polygons.

For the Manner of Fortifying Cannons and Culverins, also Mortar-Pieces: See the Treatise of GUNNERY, and that of MILITARY-ART. Of Fortification have wrote these

A U-

AUTHORS,

Ezzard of Barleduc. Samuel Marolois. Adam Fritach. Stevin, in Italian, and others. See Decha-le's Fortification, French. Vauban's Fortification, French. Fortification de Mons. Coehorne, French. Fortification Francois, Espagnoli, Italienno, & Hollandois, in French. Del Cavallero Francino Tensinii. Del Cavallero Alessandro Baron de Groot. Herigone. Coehorne's.

Of GUNNERY.

GUNNERY is chiefly the Art of Forti-
fying Cannon, Culverins, &c. for Exe-
cution in War, and is the chief Business of the
Engineers in Armies, either for battering a
Town, or its Walls; also Castles, or Batta-
lions and Squadrons lodged upon a Hill; like-
wise for cutting off Rigging, &c. at Sea; and
the Use of Mortars for firing Towns, &c.

The Names of the principal Parts of a Piece
of Ordnance, are as follow, the Outside
round about the Piece is called, The Superficies
of her Metal; The Substance or whole Mass,
The Body; The Hollownes or Concavity,
The Bore; So much of her Hollownes as con-
taineth the Powder and Shot, The Chamber;
The Remainer, Her vacant Cylinder; The
Spindals or Ears, The Trunnions; The Pum-
mel at her Coyle, The Cassacabel Deck; The
little Hole, The Touch Hole; All the Part
behind the Touch Hole, Her Breech or Coyle;
The greatest Ring at her Touch Hole, Her

The Names of the
principal Parts of
a Piece of Ord-
nance.

The Name of each
several Piece of
Ordnance, see af-
ter in the Table.

Base Ring; The next Ring above the Touch-
Hole, Her Reinforced Ring; The next her
Trunnion Ring, The Ring next her Mouth;
The Muzzle Ring, The Ring between the
Trunnion Ring and Muzzle Ring; Her Cornish
Ring; All the Rings and Circles about the
Muzzle; The Frieze; The whole Length; The
Chase.

How much Pow-
der for Proof of a
Piece, and how
much for Action.

Of *Powder*, regard must be had to the
Strength and Goodness thereof, which is to
be ordinary Corn Powder, and then $\frac{4}{5}$ of the
Weight of the Iron Bullet for Proof of your
Cannon; but for Service, half the Weight of
the Bullet is enough especially for Iron Guns,
which will not endure so much Powder as
Brass Ordnance by one Quarter. For Culver-
ings, the whole Weight of their Shot for Proof
and for Action $\frac{2}{3}$. For the Saker and Falcon
 $\frac{3}{4}$ of the Weight of their Shot, and for lesser
Pieces the whole Weight may be used in Ser-
vice till they grow hot, but then you may
abate with discretion. For Proof of these lit-
tle Pieces you may take once and $\frac{1}{3}$ of the
Weight of their Bullet. See more in the
Table.

Butter and Borax
will silence the Noise
of Powder.

See more in the
Treatise of Fow-
ling.

Bullets how to be
proportioned.

Bullets must be somewhat less than the Bore
of the Gun, that it may have vent in the dis-
charge, and not stick and break the Piece.
Some think a quarter of an Inch less than the
Bore will serve for all Guns; but this Vent is
too little for a Cannon, and too much for a
Falcon; therefore it is more Rational and Ar-
tificial to divide the Bore of the Gun into 20
equal Parts, and let the Diameter of the *Bullet*
be 19 of those Parts, according to which Pro-
portion the Table is Calculated.

The Wound of a
Tin Bullet more
dangerous, than
one of Lead. See
in the Treatise of
Metals, p. 33.

Note, A *Bullet* of Cast Iron of 4 Inches Dia-
meter, weighs 9 Pounds of *Avoirdupois* Weight.

A TABLE of GUNNERY.

The Names of the several Pieces of Ordnance.	Guns Length.		Guns Weight.	Guns Bore.		Bullets Diameter.		Bullets Weight.		Ladles Length.		Ladles Breadth.		Powder Weight.		Shoots Level.	Utmost Random.
	Feet.	Inches.	Pounds.	Inches.	Parts.	Inches.	Parts.	Pounds.	Ounces.	Inches.	Parts.	Inches.	Parts.	Pounds.	Ounces.	Paces.	Paces.
A Base,	4	6	200	1	2	1	1	0	5	4	0	2	0	0	8	60	600
A Rabinet,	5	6	300	1	4	1	3	0	8	4	1	2	4	0	12	70	700
A Falconet,	6	0	400	2	2	2	2	1	5	7	4	0	0	1	4	90	900
A Falcon,	7	0	750	2	6	2	5	2	8	8	2	4	4	2	4	130	1300
Minion Ordinary,	7	0	800	3	0	2	7	3	4	8	4	0	0	2	8	120	1200
Minion Largest,	8	0	1000	3	2	3	0	3	12	9	0	5	0	3	4	125	1250
Saker Least,	8	0	1400	3	4	3	2	4	12	9	6	6	4	3	6	150	1500
Saker Ordinary,	9	0	1300	3	6	3	4	0	0	10	4	6	6	4	0	160	1600
Saker old sort,	10	0	1800	4	0	3	6	5	5	11	0	7	2	5	0	163	1630
Demi-Culverin Least,	10	0	2000	4	2	4	0	9	0	12	0	8	0	6	4	174	1740
Demi-Culverin Ordinary,	11	0	2700	4	4	4	2	10	11	12	6	8	0	7	4	175	1750
Demi-Culverin old sort,	11	0	3000	4	6	4	4	12	11	13	4	4	4	8	8	178	1780
Culverin Least,	11	0	4000	5	0	4	6	15	0	14	2	0	0	10	0	180	1800
Culverin Ordinary,	12	0	4500	5	2	5	0	17	5	16	0	4	4	11	6	181	1810
Culverin Largest,	12	0	4800	5	4	5	2	20	0	16	0	10	0	11	8	183	1830
Demi-Cannon Least,	12	0	5400	6	2	6	0	30	0	20	0	11	4	14	0	156	1560
Demi-Cannon Ordinary,	12	0	5600	6	4	6	1	32	0	22	0	12	0	17	8	162	1620
Demi-Cannon Large,	12	0	6000	6	6	6	3	36	0	22	6	12	0	18	0	180	1800
Cannon Royal,	12	0	8000	8	0	7	4	58	0	24	0	14	6	32	8	185	1850

Ladles, how to
be proportioned.

Ladles ought to be so proportioned for every Gun, that two Ladlefuls of Powder may Charge the Piece; and the breadth of all Ladles to be two Diameters of the Shot, that so a third Part of the Compass may be left open, for the Powder to fall freely out of the Ladle. Their length must be different, according as the Piece is fortified.

Of the Range of
a Bullet.

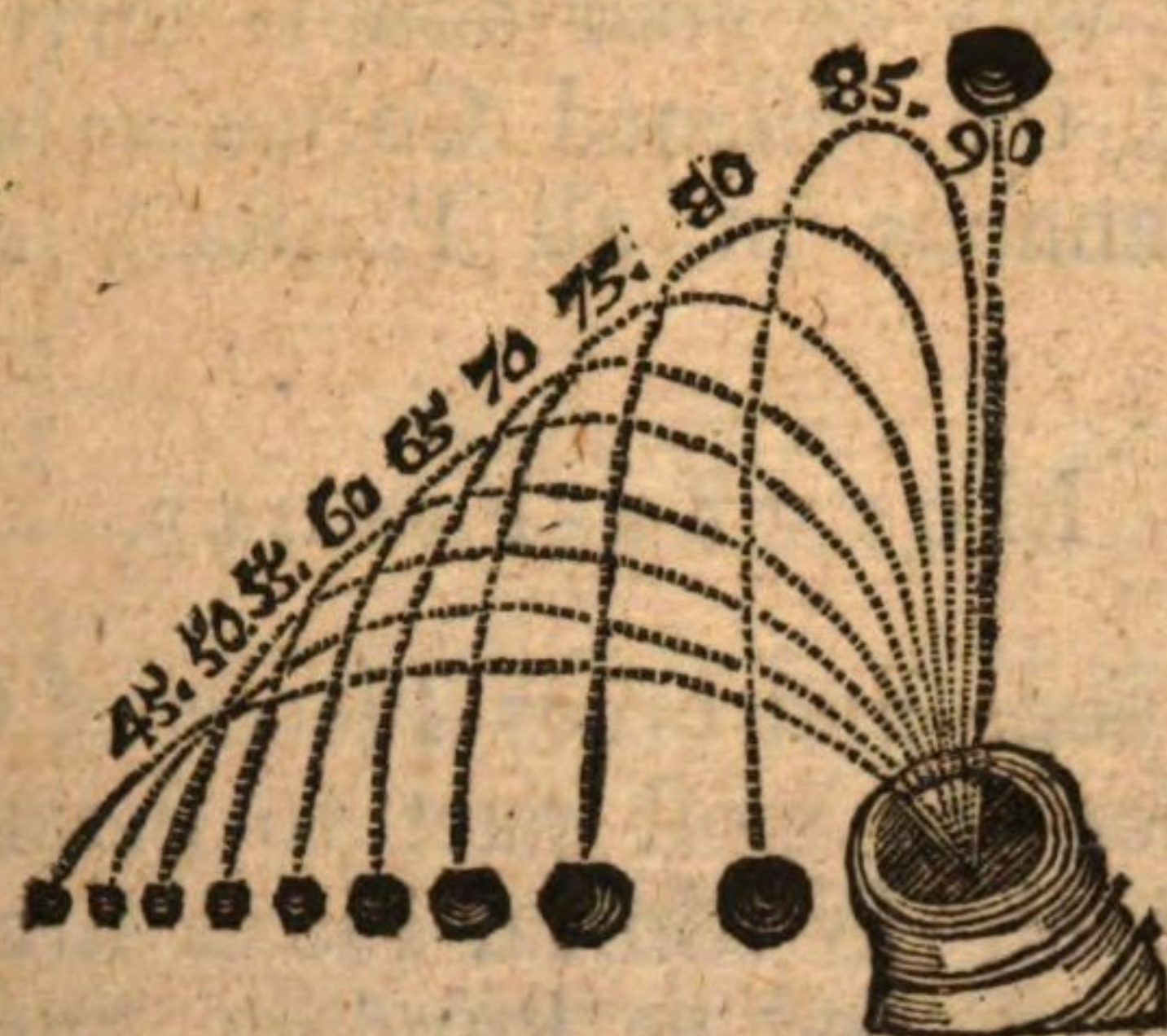
To know how far any Piece of Ordnance will shoot, there is much difference among Authors, but all agree in this; first, that the Bullet is carried from the Mouth of the Piece more violently, and for a good space in a straight Line, but afterwards as it proceeds further, as the violent force of the Motion abateth, so the Bullet sinketh down by degrees 'till it graze upon the Ground. The right Range of every Piece being discharged in a Level or Parallel to the Horizon, is set down in the foregoing Table, in which the Cannon exceeds not above 185 Paces, at five Foot to each Pace. Those who reckon many more Paces, count but ordinary Steps or Paces, viz. of two Foot and a half. The utmost Random likewise that is from the Platform to the first graze of the Bullet, is found for the most part to be about 10 times the distance of the right Range, and so is set down in the Table.

What distance for
Battering with
Cannon.

Batteries made with such Pieces are usually made at 100, or 120 Paces (of five Foot to each Pace) at which distance they do best Execution.

In Mounting a Piece from the Level, *Note*, the utmost Random is to the Angle of 45 Degrees, (the like of Mortar-Pieces) for if you Mount any Piece higher, the Random of the Bullet will be shorter and shorter; so that if
you

you could shoot exactly upright, the Bullet would fall down into the Piece again.



There are three Degrees used in Fortifying each sort of Ordnance, both Cannons and Culverins. First, Such as are ordinarily fortified, which are called Legitimate Pieces. Secondly, Such whose Fortification are lessened, which are called Bastard Pieces. Thirdly, Double fortified Pieces, or extraordinary Pieces. This Fortification is reckoned by the thickness of the Metal at the Touch-hole, at the Trunnions, and at the Muzzle, in Proportion to the Diameter of the Bore.

Fortifications of
Ordnance.

The Cannons double fortified have full one Diameter of their Bore in thickness of Metal at their Touch-hole, and $\frac{11}{12}$ at their Trunnions, and $\frac{7}{8}$ at their Muzzle. The lessened Cannons have at their Touch-hole but $\frac{3}{4}$ or $\frac{11}{12}$ of the Diameter of their Bore in Thickness of Metal, and $\frac{9}{12}$ at their Trunnions, and $\frac{5}{8}$ at their Muzzle. The ordinary fortified Cannons have $\frac{7}{8}$ at the Touch-hole, $\frac{5}{8}$ at the Trunnions, and $\frac{3}{8}$ at the Muzzle. All the double fortified Culverins, and all lesser Pieces of that kind, have

have one Diameter and $\frac{1}{8}$ at the Touch-hole, $\frac{15}{16}$ at the Trunnions, and $\frac{9}{16}$ at the Muzzle. And the ordinary fortified Culverins are fortified every way as your double fortified Cannons, and the lessened Culverins as the ordinary Cannons in all Points. And now as to

MORTAR-PIECES.

As Cannons and other Pieces of Ordnance are used for the most part to shoot forward near a Level, so Mortar-Pieces are used to shoot upward, and at Random, into Towns, &c. and therefore the Randoms of these Pieces are very necessary to be known. And most of the Tables found thereof agree in their Randoms, tho' they appear in several Dresses, one of the best whereof is that one taken from *Mr. Norton's Observations*.

Mr.

Mr. Norton's Table of R A N D O M S for Mortar-Pieces.

Degrees.	Yards.	Diff.	Degrees.	Yards.	Diff.	Degrees.	Yards.	Diff.
45	750	6	61	603	12	76	362	21
46	744	7	62	591	12	77	341	21
47	737	7	63	578	13	78	330	21
48	730	7	64	564	14	79	298	22
49	723	8	65	550	14	80	275	23
50	715	8	66	536	15	81	251	24
51	707	8	67	521	15	82	227	24
52	699	9	68	506	16	83	202	25
53	690	10	69	490	16	84	176	26
54	680	10	70	474	17	85	149	27
55	670	10	71	457	18	86	121	28
56	660	11	72	439	18	87	92	29
57	649	11	73	421	19	88	62	30
58	638	11	74	402	20	89	31	31
59	627	12	75	382	20	90	00	31
60	615							

The Yards of the Random.

Degrees of Mounture.

The Yards of the Random.

Degrees of Mounture.

The Yards of the Random.

Degrees of Mounture.

See Phillip's Mathematical Manual, &c.

Of ASTRONOMY.

That this was an Ancient Science, see *Job* 9. 9, 38, 31.

ASTRONOMY is a very Ancient Science, being well known to the old *Indians, Egyptians, Moors, Chaldeans, Jews, Arabians*, and others, tho' there hath been some differences (in respect of the Fundamentals of this Art) amongst them, as well as the Modern Astronomers; to dive a little into which Matter, it will be convenient to declare what may be necessary concerning the different Systems of the World; the first, as being thought most consonant to the Letter of Scripture, is

Ptolemaick Sy-
stem.

The *Ptolomean* System, the most Ancient, and invented by one *Claudius Ptolomæus*, a Native of *Pelesium*, about *Anno Christi* 135. who wrote much on this Subject. He placed the Globe of Earth and Water in the Center of the World, and supposed it destitute of all Motion. Next to the Earth he placed the Air, with Vapours and Exhalations, which raising it self only a few Miles above the Earth, is called the *Atmosphere*. Next to that he placed the Element of Fire, and in the Spaces above, he ranked the Planets in order, as is hereafter rehearsed.

Atmosphere, what. See also Air in the Treatise of Elements.

Copernican Sy-
stem.

See in the Treatise of *Arithmetick*, p. 147. and in the Treatise of *Elements*, p. 116.

The *Copernican* System is the best received by the Modern Astronomers, and was first found out by *Nicholaus Copernicus*, a Physician of *Thorne* in *Prussia*. He lived A. C. 1536. and framed an Hypothesis in Imitation of the *Pythagoreans*, who attributed a Motion to the Earth, and placed the Sun, as the Soul, in the Center of the World, and assigned the same place to the Earth, which *Ptolemy* allows the Sun, making the Earth a Planet, having Annual

nual Motion about the Sun which was fixed; and this Opinion our ablest Astronomers embrace, tho' some few oppose it, rather for want of understanding the Symbolical Verbation of that Place in Scripture, where it is said, *The Sun hasted not to go down.* See *Joshua* 10. 12, 13. than that it must necessarily imply a Motion in the Sun. See hereafter as to Interpretation of some Passages in Scripture, in our Treatise of *ERRORS* of the People, and also at the end of our *ARITHMETICK*.

The *Tychonean* System, was invented by *Tycho Brahe*, a Nobleman of *Denmark*, and partakes of both the foregoing Hypotheses. He also supposed that *Mercury*, *Venus*, and all the Planets, except the *Moon*, in their Motion, respect the Sun as their Center; so that *Saturn*, in opposition to the Sun, is nearer to the Earth than *Venus* in *Apogæo*; and that *Mars*, in opposition to the Sun, is nearer to the Earth than the Sun it self.

The Astronomers divide the World into two Essential Parts, that is,

The *Terrestrial*, or *Elementary* Part, containing the Element of Fire, next to the Sphere of the *Moon*, next which beneath is the *Air*, below that the *Water*, and the lowest the *Earth*. Of which see more in the Treatise of *GEOGRAPHY*.

The *Celestial* containeth 8 say some, many 9, others 10, and not a few will have it to be 11 Heavens, which in Ascending are thus ranked, 1. The Sphere of the *Moon*; 2. Of *Mercury*; 3. Of *Venus*; 4. Of the *Sun*; 5. Of *Mars*; 6. Of *Jupiter*; 7. Of *Saturn*; 8. The Orb of fixed Stars, called *The Firmament*; 9. The *Chrystalline Heaven*; 10. The *Primum Mobile*;

Tycho Brahe's System.

The World divided into

Terrestrial,

Celestial,

Mobile; 11. The *Imperial Heaven*, where God and the Elect are believed to Reside.

The Motions of
the Heavens.

The Magnitude of these Heavens are known by their Courses, which those great Bodies within them make round the Poles of the *Zodiac*. The *Moon* runs her Course thro' the Heavens from West to East in 27 Days; 8 Hours; *Mercury* in 88 Days; *Venus* in 225 Days; *Sol* in 365 Days, 6 Hours; *Mars* in about 2 Years; *Jupiter* in 12, and *Saturn* in 30. The Eighth Heaven hath a threefold Motion (saith the Modern Astronomers) the One is proper, and is the Motion of Trepidation, which is finished in 7000 Years; the Second is called the Motion of Circumvolution, being the Motion of the Ninth Sphere, and is finished in 49 Years; the Third is made by the Tenth Orb, and is called the Motion of the *Primum Mobile*, or the Rapid and Diurnal Motion, which turns round in the Compass of one Natural Day; by which Motion is caused Day and Night, and the daily Rising and Setting of the Heavenly Light. All which appears by well consulting

The Sphere, what.

A Sphere of Silver, and another made of Glass.

See in *Geometry*, p. 158.

The *Sphere*, an Instrument of a round Figure, containing several Circles, invented to represent the Heavenly Motions, and Fabrick of the World, appearing like a little Ball in the Center of the Sphere, having the Axis thro' it, the Extremities whereof are called Poles, about which the whole Body of the Heavens is supposed to turn in the space of 24 Hours. But for better understanding of the Sphere, we must Note the Circles and Parts thereof, which are

The Poles.

The *Poles* of the World, being two fixed Points in the Heavens, Diametrically opposite to one another; the one visible in our Hemisphere,

isphere, called the *Artick Pole*; the other not seen of us, because in the lower Hemisphere, and is called the *South*, or *Antartick Pole*.

The *Axis* of the World is an Imaginary Line, drawn from Pole to Pole, about which the Diurnal Motion is performed from East to West

The Axis.

The *Meridians* are great Circles concurring and intersecting one another in the Poles of the World.

Meridians.

The *Æquator*, or *Equinoctial*, is a great Circle, 90 Degrees distant from the Poles of the World, cutting the Meridians at right Angles, and dividing the World into two Equal Parts, called the North and South Hemisphere.

Equinoctial.

The *Zodiack* is a Zone having 8 Degrees on either side of the Ecliptick, in which Space the Planets make their Revolutions, divided into 12 Signs, having 30 Degrees to each Sign, as γ *Aries*, δ *Taurus*, Π *Gemini*, ζ *Cancer*, Ω *Leo*, ϖ *Virgo*, which are called Northern Signs; ♋ *Libra*, ♏ *Scorpio*, ♐ *Sagittarius*, ♑ *Capricornus*, ♒ *Aquarius*, and ♓ *Pisces*, called the Southern Signs.

Zodiack.

Twelve Signs.

The *Ecliptick* is a Circle in the midst of the Zodiack, touching the Equinoctial in the two opposite Points of *Aries* and *Libra*. The Sun never swerves from this Circle.

Ecliptick.

The *Colures* are two Meridians dividing the Equinoctial and Ecliptick, into two Equal Parts; one of these passeth the Equinoctial Points of *Aries* and *Libra*, and is called the Equinoctial Colure; the other by *Cancer* and *Capricorn*, called the *Solstitial Colure*.

Colures.

The *Poles* of the Ecliptick are two Points, 23 Degrees 30 Minutes distant from the Poles of the World.

Poles of the Ecliptick.

The

Tropicks.

The *Tropicks* are two small Circles parallel to the Equinoctial, and distant therefrom 23 Degrees, 30 Minutes, limitting the Sun's greatest Declination. The Northern Tropick is called the Tropick of *Cancer*; the Southern, the Tropick of *Capricorn*.

Polar Circles.

The *Polar Circles* are two small Circles parallel to the Equinoctial, and are distant from the Pole of the World 23 Degrees 30 Minutes; that which is adjacent to us, is called the *Arctic Circle*, and the other the *Antarctic Circle*.

The Zenith.

The *Zenith* and *Nadir* are two Points Diametrically opposite; the *Zenith* is the Vertical Point, or Point right over our Heads, and the *Nadir* is directly underneath our Feet, being opposite thereto.

Nadir.

Horizon.

The *Horizon* is a great Circle, 90 Degrees distant from the Zenith and Nadir, dividing the World into two Equal Parts, the Upper and Visible Hemisphere, and the Lower and Invisible.

Meridian of a Place.

The *Meridian* of a Place is that which passeth by the Zenith and Nadir of a Place.

Azimuths.

Azimuths or Vertical Circles, are great Circles of the Sphere, concurring and intersecting each other in the Zenith and Nadir.

Almicanters.

Almicanters or Parallels of Latitude, are small Circles parallel to the Horizon, imagined to pass thro' every Degree and Minute of the Meridian, between the Zenith and Horizon.

Parallels of Latitude and of Declination.

Parallels of Latitude or Declination, are small Circles parallel to the Equinoctial; they are called Parallels of Declination, in respect of the Sun or Stars in the Heavens; and Parallels of Latitude, in respect of any Place upon the Earth.

The

The *Latitude* of a Place is the height of the Pole above the Horizon, or the distance between the Zenith and Equinoctial. Latitude of a Place.

The *Latitude* of a Star is the Arch of a Circle contained between the Center of a Star, and the Ecliptick Line making right Angles with the Ecliptick, and is counted either Northward or Southward, according to the Situation of the Star. Latitude of a Star.

Longitude on the Earth is measured by an Arch of the Equinoctial, contained between the Primary Meridian (or Meridian of that Place where the Longitude is assigned to begin) and Meridian of any other Place, counted always Easterly. Longitude on the Earth.

Longitude of a Star is that part of the Ecliptick, which is contained between the Stars place in the Ecliptick, and the beginning of *Aries*, counting them according to the Succession of the Signs. Longitude of a Star.

Altitude of the Sun or Stars is the Arch of an Azimuth, contained betwixt the Horizon and Center of the Sun or Star. Altitude.

Ascension is the rising of any Star, or any part of the Equinoctial above the Horizon. Ascension.

Descension is the setting thereof. Descension.

Right Ascension is the Number of Degrees and Minutes of the Equinoctial, (counted from the beginning of *Aries*) which cometh to the Meridian with the Sun or Stars, or with any Portion of the Ecliptick. Right Ascension.

Oblique Ascension is an Arch of the Equinoctial, between the beginning of *Aries*, and that part of the Equinoctial that riseth with the Center of a Star, or with any Portion of the Ecliptick in an Oblique Sphere. Oblique Ascension.

Oblique Descen-
sion.

Oblique Descension is that part of the Equinoctial which setteth therewith.

Ascensional Dif-
ference.

Ascensional Difference is an Arch of the Equinoctial, being the difference between the Right and Oblique Ascension.

Amplitude.

The *Amplitude* of the Sun or Star, is an Arch of the Horizon, intercepted between the rising or setting of the Sun or Star, and the East to West Point of the Horizon.

Parallax.

The *Parallax* is the difference between the true and apparent Place of the Sun or Star.

Refraction.

Refraction is caused by the Atmosphere, or vaporous thickness of the Air, near the Earth's Superficies, whereby the Sun and Stars seem always to rise sooner and set later, than in reality they do.

The Two Hemi-
spheres.

Of the *Two Hemispheres* of the Heavens; the one shews the Constellations of the Northern, and the other of the Southern Hemispheres of the Heavens, whereby may be seen the Right Ascension and Declination of any of the Stars in either Hemisphere; by which any Star may be easily found, and the Way or Course of a New Star or Comet may be traced in its Way or Orbit, with several other Uses.

Of Comets. See
in the Treatise of
Meteors.

Altho' (as *David* saith) the Number of the Stars is only known to God, yet the Astronomers, by their Telescope Observations, have found and discovered most of them, dividing all the fixed Stars (so called because they always keep one invariable distance from one another, and from the Ecliptick) into 48 Images or Constellations; whereof 21 are placed in the Northern Hemisphere, 15 in the Southern Hemisphere, and 12 in the Zodiack.

Fixed Stars.

Their Substance.]

As to their Substance, the Modern Philosophers and Astronomers believe their Bodies Compound, and not Simple, made up of Elementary

mentary Matter, formed into fiery Globes, and consisting of Matter, Solid and Liquid, as this Terraqueous Globe below. Their Light, some consider to be innate, others think it borrowed of the Sun. Their Colour various, according to the difference of their Light, tempered by the divers Constitutions of their Matter or Substance, some appearing Ruddy, others Bright, &c. whence some have made an Estimate of their Natures, and ranged them under the several Planets. Their Scintillation distinguisheth them from the Planets, which have no such Twinkling or Glimmering Light. Their Figure, tho' seemingly round, are not mathematically so; for their Superficies are discovered to be uneven by Telescopes, and to consist of many Angles and Sides. As to their Number, some Astronomers compute the most noted to be 1022, but *Galilæus* found 62500 Stars, where but 63 appeared to the bare Eye. As to their Magnitude, they are distinguished into Six Differences; the Astronomers appointing to

Their Light.

Their Colour.

Their Figure.

Their Number.

Their Magnitude.

The First Magnitude 15 Stars, whereof each one contains the Earth 207 times.

The Second Magnitude 45 Stars, whereof every one contains the Earth 90 times.

The Third Magnitude 208 Stars, whereof each one contains the Earth 72 times.

The Fourth Magnitude 474 Stars, whereof every one contains the Earth 54 times.

The Fifth Magnitude 217 Stars, whereof each one contains the Earth 50 times.

The Sixth Magnitude 49 small Stars, which contain the Earth 18 or 20 times.

Besides, there are 14 others, whereof 5 are called Cloudy, and the other Misty or Dark, because hardly to be perceived. These make

up just the Number of 1022, as before alledged. But for the better Knowledge of the 48 Constellations, and the chief or most visible Stars within them, take this following Account, beginning with the 12 Signs, thro' which the Sun passeth Annually in the Zodiack; the first of which is

The Constellations
of, 1. Aries.

Aries, or the Ram, in which Constellation three Stars are most conspicuous, viz. two in the left Horn, and one disposed between the Horns.

2. Taurus.

In *Taurus*, or the Bull, are the seven Stars, called the *Pleiades* in his Neck, and five called the *Hyades*, near the great bright Star, called *Aldebaran*, or the Bull's Eye.

3. Gemini.

In *Gemini*, or the Twins, are four Stars, one of which is on the North Head of the Twins, and called *Castor*; another in the South, *Pollux*, one on the right Foot of *Castor*, t'other on the left of *Pollux*.

4. Cancer.

In *Cancer*, or the Crab, scarce any Stars appear, beside one near to the right Claw.

5. Leo.

In *Leo*, or the Lyon, are divers bright Stars, two whereof are of the first Magnitude; that on the Breast called *Cor Leonis*, and that in the Tail, called the *Lyon's Tail*.

6. Virgo.

In *Virgo*, or the Virgin, are several bright Stars, two whereof are of the first Magnitude, being called *Spica Virginis*, standing in the Ear of Corn in her left Hand.

7. Libra.

In *Libra*, or the Scales, are two very bright Stars, so called.

8. Scorpio.

In *Scorpio*, or the Scorpion, are several great Stars, one of which is called the *Scorpion's Heart*.

9. Sagittarius.

In *Sagittarius*, or the Archer, are four chief Stars on his Shoulder, making a *Trapezium*,
or

or Table, and three or four resembling a Bow, with one imitated on an Arrow.

In *Capricornus*, or the Goat, are four, two in his Tail, and two other in his Horns. 10. Capricorn.

In *Aquarius*, or the Water-Bearer, are several Stars of the First, Third, and Fourth Magnitude. 11. Aquarius.

In *Pisces*, or the Fishes, are several small Stars, but bound with a Ribband, adorned with Stars of the First Magnitude. 12. Pisces.

These 12 Signs, or Constellations, are all disposed in the Zodiack: To know the Time the Sun enters any of these Signs, you may have recourse to every common Almanack; but it being of more curious Satisfaction, and utterly unknown to many, the Invention of these Mysterious Portraictures, given through Astronomers Observations, (the Antiquity whereof is great, as may be found by that of *Job* 9. 9, 38, 31) we shall insert something from *Marsilius Ficinus*, in the Third Chapter of his Commentary upon the Third Book of the Second *Ænead.* of *Plotinus* the Platonick Philosopher.

The Ancients put the *Ram* first for the Love of *Jupiter Ammon*, whom they figured with Horns on his Head (as now Painters do by *Moses*) and the Sun then, (*viz.* in *March*, when he enters this Sign) begins to recover his Force, yet is of a mild Nature, as the Sheep are. *Ficinus* adds, that the *Bull* is next, because at that time the Earth is to be manured. Then the *Twins*, because of the Increase and Multiplication of Cattle, &c. which germinate and entertain one another. The *Crab* followeth, because the Sun that Month retireth, as the Crab doth in its Motion, which is al-

The Mysterious Signification of the Images or Signs in the Zodiack.

ways backwards. Afterwards the *Lion*, because the Sun grows outrageous, and is red and burning. Consequently the *Virgin* next, because the Earth being burnt, becomes barren, and produceth nothing at that time. Then the *Balance*, because the Sun makes the Days and Nights equal. *Scorpio* succeeds, so called, because the Sun being in this Sign, or part of the Zodiack, the Air begins to Nip, and wax Cold. The *Archer* is so called by reason of his Vehement Cold, and of his Arrows, which shoot forth Winds. Then the *Goat*, because the Sun begins to rouse himself in a manner to be nimble and dance. The *Water-Bearer* and his *Fishes*, because of the Rains and Humidity of the Season in the Months of *January* and *February*.

But now it is time we return to the Constellations without the Zodiack, beginning with that next the Pole.

13. *Ursa Minor*.

Ursa Minor, or the Little Bear, hath seven Stars, four whereof are almost in a square Figure, the other three are in the Tail; the hindermost and brightest being called the North Star, because the very nearest to the Pole of any visible Star.

The North Star.

14. *Ursa Major*.

Ursa Major, or the Great Bear, hath also seven Stars in like Position with the former. This Constellation was anciently called *Plaustrum Majus*, or the Greater Wain, which Name it often still retains among the Astronomers.

15. *Boötes*.

Boötes, the Herdsman, hath many bright Stars; but the most noted is *Arcturus*, betwixt his Thighs, on the rim or edge of his Coat.

The

The *Dragon* hath many Stars, but none greater than those of the Third Magnitude. 16. *Draco*.

The *Crown* of *Ariadne*, represents a half Circle, and is composed of five Stars. 17. *Crown*.

Engonasi, or *Hercules*, is posited Kneeling, and hath several great Stars. 18. *Hercules*.

Lyra, the Harp, hath the most eminent Star next to the Dog-Star, and some others. 19. *Lyra*.

The *Swan* is an illustrious Constellation within the milky Way, of which, see *Galaxy* hereafter. 20. *Swan*.

Cepheus hath nineteen Stars, great and small, his right Foot stands on the Tail of *Ursa Minor*; he was Husband to

Cassiopea, a Lady sitting in her Chair, containing ten Stars, five of which are of the Third Magnitude. In November the 15th, *Eliz.* a Meteor resembling a Star, (found to be above the Moon) was seen in *Cassiopea*, exceeding *Jupiter* in Brightness, and in that Place was carry'd with the Diurnal Motion of the Heavens sixteen Months together, tho' after eight Months it was perceived to grow less and less. 21. *Cepheus*. 22. *Cassiopea*.

Perseus placed between the Feet of *Cassiopea* and the *Bull*, hath a bright Star on his Back, and another called *Medusa's* Head in his left Hand, and four more called *Gorgons*. 23. *Perseus*.

Andromeda, Daughter to *Cassiopea*, hath three Stars of the Second Magnitude; the last in the Head, common to her and *Pegasus*. 24. *Andromeda*.

Delton, or the Triangle, consists of three bright Stars of the Fourth Magnitude. 25. *Triangle*.

Auriga the Waggoner hath three Stars, the chief called *Capra* the Goat, on the Shoulder. 26. *Auriga*.

Pegasus, the Poets Horse, hath seven great Stars, one called the *Mouth* of *Pegasus*. 27. *Pegasus*.

28. Dolphin.

The *Dolphin* between the *Colt*, the *Eagle* and the *Arrow*, hath ten Stars.

29. Arrow.

The *Arrow* hath five Stars, that at the Points end of the Fourth Magnitude.

30. Colt.

The *Colt*, is as it were but the Shadow of the Head of the Flying-Horse, called *Pegasus*, and hath four Stars.

31. Eagle.

The *Eagle* hath several bright Stars, one whereof is called the Bright Star of the *Eagle*.

32. Serpentarius.

Serpentarius, *Ophiuchus*, or the Serpent-Bearer, is a large Asterism or Constellation, but hath no Stars bigger than of the Third Magnitude. He is called *Æsculapius*.

33. Serpent.

The *Serpent*, or *Ophiuchus*, hath several Stars of the Third and Fourth Magnitude.

The following fifteen are all Southern Signs, viz.

34. Whale.

The *Whale*, situate under *Pisces* and *Aries*, having a vast wide Mouth, and therein a Star of the First Magnitude, called the Bright Star of the Jawbone of the *Whale*, and another as big in the midst of the Point of his Tail, besides some other large Stars.

35. Eridanus.

Eridanus is a River, and a long winding Asterism, betwixt *Orion* and the *Whale*; the Stars are small.

36. Hare.

The *Hare* hath twelve Stars, four of the First Magnitude, and four others of them small, and placed in the Ears.

37. Orion.

Orion, God of the Winds, hath many bright Stars, two on his Shoulder, three in his Girdle, called *Three Kings*; one in his right Knee, and another in his left Foot, called *Regel*.

38. Canis Major

Canis Major, or the Great Dog, hath not his equal for a bright Star, called *Syrus*, just at his Mouth.

Canis Minor riseth before the Great Dog, and hath a bright Star in his Neck, and another in his Thigh, called *Procyon*.

The *Ship* hath but few Stars to be seen, except one at the Helm, called *Canopus*.

Hydra, the Water-Serpent with many Heads; it is of great Extent, reaching almost in length 60 Degrees, and hath a bright Star on the Breast, called *Cor Hydrae*.

The *Bowl*, or Cup, on the midst of *Hydra*, hath a C, or half Circle of Stars.

The *Crow* hath a Table in it, consisting of four pretty large Stars.

The *Centaure*, besides fourteen visible Stars, (whereof ten are very apparent) hath four remarkable Stars, called the *Crofters*, by which Mariners sail in the Southern Hemisphere, as in the Northern by the Pole-Star.

The *Wolf*, whose Head reacheth the middle of the *Scorpion*, hath nineteen, but not great Stars.

The *Altar*, or Cenfor, is for the most part hid under the bending of the *Scorpion's* Tail.

The *South Crown* hath one notable Star, among others, called *Uraniscus*, or the Petty Heaven.

The *South Fish* hath many pretty large Stars, and one called *Fomabant*, very large in its Mouth.

The *Galaxy*, or milky Way, hath its Name from its white appearance, there being a vast Number of thick set Stars, which occasion it to look so lightfom.

Note, That when the Sun, or any Planet is said to be in any Sign, the meaning is that it is placed under it, or intervenes between our Eye and that Sign, the fixed Stars being infinitely

nitly higher than the Sun, or any other of the Planets.

Concerning the Nature, Affections, &c. of the Planets, see after in *ASTROLOGY*. By the Ascensional Difference and Motions of the Planets and Stars, is known the Increase and Decrease of the Artificial Day in every Latitude, and the Distinction of Times and Seasons; also the several kinds of Days and Weeks, Months and Years are known by the Benefit of this Science, wherefore we shall treat of something thereof here.

Hour.

60 Minutes make 1 Hour, and 24 Hours 1 Day.

Artificial Day.

An Artificial Day is from Sun-rise to Sun-set, of which, and of

Natural Day.

A Natural Day, which contains 24 Hours, I shall speak more at large at the end of this Treatise of *Astronomy*.

Week, Month,
and Year.

7 Days make one Week, 4 Weeks 1 Month, and 12 Months (called Kalendar, or Solar Months) or 13 Lunar Months, make 1 Year, which contains 365 Days and odd Minutes, of which see hereafter, while we come to treat of the Etymologies of the Days of the Week.

Etymologies of the
Week-days given
by the Saxons.

Sunday had its Name from the Idol of the Sun, adored on that day by the Ancient *Saxon* Pagans.

Monday, from the Moon, adored likewise by the *Saxons*.

Tuesday, from the Idol *Tuysco*, the peculiar God of the *Germans*.

Wednesday, from the Idol *Woden*, adored also by the *Saxons*.

Thursday,

Thursday, from the God *Thor*, or *Jupiter*, of great repute amongst them, and adored on that day of the Week.

Friday, of the Goddess *Friga*, who was an Hermaphrodite.

Saturday, from the Idol *Seater*, that day being Celebrated to him.

See *Verstegan's* Antiquities, where you may see in Sculpture the Forms of these Idols, as anciently adored.

The *Latins* give other Names for the days of the Week, as *Sunday* they call *Dies Dominicus*, *Monday* they call *Dies Lunæ*, *Tuesday* they call *Dies Martis*; and the Astrologers say the Planet *Mars* governs the first Hour of that Day, of which see more in *ASTROLOGY*; *Wednesday* they call *Dies Mercurij*, from the God *Mercury*, the Planet *Mercury* also governing the first Hour of that Day; *Thursday* they call *Dies Jovis*, which God was the same with *Thor* above, and the Planet *Jupiter* governs the first Hour of that Day; *Friday* they Name *Dies Veneris*, from the Goddess *Venus*, which Planet also rules the first Hour of that Day; *Saturday*, or *Saturn's* Day, called by the *Latins*, *Dies Sabbati*, being the Ancient *Jews* Sabbath. Of the Names of the several Feast-Days throughout the Year, I shall speak at the end of this Treatise of *Astronomy*.

Latine.

Numa Pompilius, disposed the Year into Twelve Months.

Now to proceed to the Etymologies of the Months.

The *Saxons* called *January*, *Wolf-Month*; *February*, *Sprout-Kele*; *March*, *Length-Month*; *April*, *Oster-Month*; *May*, *Trimilki*; *June*, *Weyd-*

Weyd-Month; July, Hey-Month; August, Arne or Barn-Month; September, Gerst-Month; October, Wyn-Month; November, Wynd-Month; and December, Winter-Month. See Verstegan, 59, 60, 61, 62.

Etymologies of
the several Months
in the Year.

January is so called from *Janus*, depicted with two Faces, as beholding the Year past (or Things past) and to come.

February took its Name from certain Sacrifices then offered, called *Februa*.

March, from *Mars* the God of War. Armies about this Time being ready to take the Field. This Month the *Jews* call *Abib*.

April signifieth the Month of Production, or springing of the Year; and hath its Name from the word *Aperio*, opening all Vegetables and other Things.

May, from *Maia*, Mother to *Mercury*.

June, from *Junius Brutus*, or as some write, *à Juniore*; for that all the young People had a meeting in that Month for Recreation.

July had its Name from the Emperor *Julius Caesar*; before that Time it was known by the Name *Quintilis*.

August had also the Name from *Augustus*, the second Roman Emperor, for enlarging of the Empire.

September signifieth the seventh Month; for the Romans before the Time of *Julius Caesar* reckoned their Months from *March*, as do now the Lawyers, and many others, reckoning the Year from the 25th day of *March*. So

October signifieth the eighth Month.

November signifieth the ninth Month, and

December

December the tenth Month. In all which Months the *Romans* had particular Times, which they distinguished by the Name of *Kalends*, *Ides*, and *Nones*. Now the

Kalends were the first day of every Month, from which they counted backwards. As the first of *April*, they named the *Kalends* of *April*, and the last of *March*, *Pridie Kalendas Aprilis*, the day before that, the third *Kalends* of *April*, the next day before that, the fourth *Kalends* of *April*, and so on 'till they came to the *Ides*. This word *Kalends* came from the *Greek* Verb *Calo*, viz. to Call; for on the first day of every Month a Cryer standing on a high Place made four or more Calls, to signify to the People how many days in that Month the Fairs or Markets called *Nundinae* should endure; from which word sprung

Kalends, what.

Nona, or *Nones*, that is to say, the Days of the Fairs, during which time the *Romans* worshipped no God. Every Month had four *Nones*, except *March*, *May*, *July*, and *October*, which had six.

Nones, what.

Ides were those days by which the *Nones* were divided from the rest, and were eight in every Month, dividing in a manner the Month into two equal Parts, for the first *Ides* commonly fell on the 13th, 14th, or 15th day of the Month. And here we may properly speak of

Ides, what.

The *Prime*, or Golden Number, so called because marked in the Kalendar of *Julius Caesar* with Letters of Gold, and is a Circle of nineteen Years; in which time it is supposed all the Lunations and Aspects between the Sun and Moon did return to the same place, its chief

Golden Number.

chief Use being to find the Age and Change of the Moon.

Cycle of the Sun. The *Cycle* of the Sun is a Revolutionary Number of twenty eight Years, in which space is a change of all the *Sunday* Letters for every Year, whereby is known the true Order of the *Sunday* Letter; A. being placed against the first day of *January*, and the rest in order to the Year's end.

To find the Cycle of the Sun by the Fingers. To find the *Cycle* of the Sun by the Fingers, let 123, 24, 25, 26, or 27, be divided by 28, (which is the *Cycle*, as above) and that which remains is the Number of Joints which is to be accounted upon the Fingers, by *Filius Estó Dei, Cælum Bonum Accipe Gratis*; and where the Number ends, that Finger shews the Year which is present, and the first Letter of each Word in the Verse, shews the Dominical Letter. As, divide 123 by 28 for the Year, and the Quotient is 4, and there remaineth 11, for which you must account 11 Words, *Filius*, &c. upon the Joints beginning from the first Joint of the Index, and you shall have the Answer.

Epaet.

The *Epaet*, is a Number not exceeding 30, because the Moon between her Changes, never exceeds 30 days, and thereby the Lunar Year consisting of 12 Months, is less than the Solar by 11 days, for to every Lunar Month, is reckoned but 29 days and half; so a Lunar Year contains 354, and the Solar 365 days, the difference is 11 days, and this is called the *Epaet*.

Indiction.

The *Indiction* is a Number of 5, 10, or 15 Years, used by the Ancient Romans in Numbering of Years, and set down by the Bishops of Rome in their Charters. the Ancient Ro-

mans

mans used also a Division of the Solar Month into *Kalends*, *Nones*, and *Ides*, as is declared before.

The *Muscovites* begin the Year on the 1st of September.

Of the several beginnings of the Year.

The *Egyptians* began the Year on the 21st of *March*, as some write; others say on the 8th of *September*, according to the *Gregorian* Stile, or on the 28th (*Chamberlain* in his *Present State of England*, saith the 29th) day of *August*, according to the *Greek* Kalendar; and so doth the *Portugueze*, as well as in divers Countries of *Africa*. See *Chronology*.

The *Ethiopians* begin the Year on the *Kalends* of *September*, as doth the *Muscovite*, as you may observe before.

The *Venetians* begin their Year on the 1st of *March*, according to the *Epact*.

The *Grecians* on the longest day, as the old *Romans* did on the shortest day, which two last seem to have most reason, as beginning just at the Periodical day of the Sun's Return.

The Year in *England*, according to the *Cycles* of the Sun and Moon; and according to *Almanacks*, begins on the 1st of *January*, but the *English* Church and State, as also her Courts of Law, begin from 25th of *March*, which is also observed in *Spain*.

Moses by God's Commandment, *ab æquinoctio verno*, i. e. *Easter*, according to which *Easter-Day* was ordained upon the Full of the Moon, being the 14th day of the first Moon after the Sun entered into the Sign of *Aries*, which is also used in *Egypt*. Afterwards, in the Year 328. the Council of *Nice* did ordain *Easter-Day* always to be upon the Sabbath-Day or Sunday next after the Full Moon.

And

And the Bishop of *Alexandria* made thereupon a List, according to the Circle or Golden Number of the Moon, beginning from the Figure 1, 'till Number 19; for that in 19 Years the Moon maketh her compleat Revolution, and concurreth with the Sun, and if the Number did fall out upon a *Sunday*, then the *Sunday* after was *Easter-Day*. The most certain way to find *Easter*, and the other Moveable Feasts in *England*, is thus; *Shrove-Tuesday* is always the first *Tuesday* after the first New Moon after *January*, and the *Sunday* following is *Quadragesima*, and the sixth *Sunday* after is *Easter-Day*, and the fifth *Sunday* after *Easter* is *Rogation Sunday*, (of which, and the Names of other Festival Days of the Year, you shall have presently) and the *Thursday* following being forty days after the Resurrection, is *Ascension-Day*, ten after which (or fifty days after *Easter*) is *Pentecost*, or *Whitsunday*, and the *Sunday* following *Trinity Sunday*; *Advent Sunday* is always the fourth *Sunday* before *Christmas-Day*, or the nearest *Sunday* to *St. Andrew's Day*.

See in *Chronology*,
Vol. I. p. 203.

In *England*, at the beginning of Christianity, they counted, as all other Christians, according to the then *Roman Account*, by *Olympiads*; afterwards (in the Reign of *Constantine*, the first Christian Emperor) by *Indictions*, or 15 Years; at length, in the Reign of the Emperor *Justinian*, 532 Years after Christ's Incarnation and not before) all Christians generally began to Account about *Anno Christi Incarnati*; at which time one *Dyonisius Exiguus*, or *Abbas*, a worthy Roman, finished a Cycle for the Observation of *Easter*, which was then generally received, and is still observed by the Church of *England*; the ground whereof is this, The Vernal Equinox

nox at that time was accounted to be the 21st of *March*, and by consequence must be the earliest Full Moon, and then *March* the 8th must be the earliest New Moon, and *April* the 18th the latest full Moon; which happening on a *Sunday*, (as it will when the Dominical Letter is C. and the Golden Number 8.) then *Easter* that Year will be *April* the 25th. So when the New Moon shall be on *March* the 2d, (as it will when the Dominical Letter is D. and the Golden Number 16.) then *Easter* will be on the 22d of *March*, as it was in the Year 1668.

Julius Caesar, the first Emperor of *Rome*, considering the *Roman* Years were reckoned confusedly, according to the Course of the Moon, by the Counsel and Instigation of *Sosigenes*, an expert Mathematician, about 44 Years before the Birth of Christ, devised a new form of Kalendar, first framed after the Course of the Sun, dividing the Year into 365 Days and 6 Hours. Now for as much as the odd 6 Hours could not be brought to Account every Year, he ordained that every fourth Year, one day should be added to *February*; (4 times 6 Hours making up a day of 24 Hours) and the Year wherein this odd day falleth, we call *Leap Year*, having 366 Days: And because it was added at the six Kalends of *March*, it is named in *Latin*, *Bissexthus*, or *Bissextilis Annus*. Nevertheless *Julius Caesar* began his Kalendar in *January*, when the Sun entereth the 8th Degree of *Capricorn*, 8 days after the Winter *Solstitium*, which then being the shortest day of the Year, fell on the 25th of *December*, and the Spring-Time *Equinoxium*, about the 25th of *March*; the which Places are now changed and flidden back in the *Julian* Kalendar.

Of the *Julian* Account, or Old Style.

Leap Year.

Solstitium.

Equinoxium.

lendar from the said Observation of the Spring *Equinoctium*, as also from the Harvest *Equinoctium*, (about the 26th of *September*) the longest day then falling out on the 25th of *June*, grounded upon this reason of the Prevention of the Equinoctial to the 12th, 11th, and 10th days of the said Months, and the 13th and 14th of *September*. But the chief cause proceeded by reason *Julius Caesar* did reckon to the Year 365 Days and 6 Hours; which is more than the just Astronomers Calculation by 10 Minutes of an Hour, and 44 Seconds, accounting 60 Minutes to an Hour, and 60 Seconds to a Minute; so that the Year truly containeth 365 Days, 5 Hours, 49 Minutes, and 16 Seconds, which difference of almost 11 Minutes in the space of about 134 Years, maketh one whole Day; and in the space of 1664 Years, from the Time the *Julian* Kalendar was set forth, came to 12 Days, 22 Hours, 40 Minutes, and 25 Seconds. Sundry Learned Men desiring it might be reformed, the Matter was propounded to divers General Councils, but took no effect, 'till Pope *Gregory XIII.* Anno 1582. when it was permitted to one *Aloysius Lilius*, Professor in Mathematick-Astrology, to set down this long desired Reformation; who resolving to do the same exactly, was hindered by the Clergy, for they would not agree that the same should be drawn back any further, than to the Time of the *Nicene* Council, which was Anno 328. and hereupon he brought the Reckoning back only 10 Days, and caused the 15th of *December* to be called the 25th Day, (*Chamberlain* in his *Present State of England*, saith the 5th of *October* should be called the 15th) which is but observed in some Places, and brought great Con-

Gregorian Account,
or New Stile.

Controversy in divers Countries. Thus the Year being brought back 10 Days, the Vernal Equinox, which was at first on the 21st of *March*, was got back to the 11th of *March*, by reason whereof sometimes 2 Full Moons pass between the *Equinox* and *Easter*, contrary to the Primitive Institution thereof; which was, that *Easter* should always be observed as aforesaid, viz. on the *Sunday* following the first Full Moon after the Vernal Equinox; therefore Pope Gregory resolved to take away 10 Days at once, as I have already said: And that the Equinox might never retrocede for the future, it was then provided that every 400 Years, 3 Bissextile Years should be left out, that is, in the Years 1700, 1800, and 1900; and so again in 2100, 2200, 2300, leaving the Year 2000 to have its Bissextile, and so every 400th Year. The not reckoning the Year 1700, as Bissextile, hath now brought the New Stile to be 11 Days before us, in our Accounts; and it happens in some Years that their *Easter* is full 5 Weeks before ours, but never after ours. And tho' our *English* Computation agrees with the Eastern Christian Churches, with the *Switzers*, and those of *Geneva*, yet cannot it be denied but this old Account is become Erroneous; for by our Rules, two *Easters* will be observed in one Year, as was *Anno* 1667. and not one *Easter* in another, as in the Year 1668. as hath been Stated, and formerly Represented in Proposals to the Parliament.

And as by the Addition of Time growing by certain Minutes and Seconds every Year, arising to one whole Day in every 4th Year (in February) as it is increased to several Days, it might by the same Rule decrease so much in few Years, by leaving out and suspending that one Day

A Reformation of the *Julian* Calendar, with the Alteration of Ten Days.

which is so added, until it come to the first Institution and Calculation of the Julian Kalendar, which may be reformed in about 44 Years, or 52 Years taken strictly, and that without any perceptible difference; and after the said 52 Years expired, might be added the said Day again, and there would not increase any one Day more but in 134 Years, and all the yearly Observations might be accommodated accordingly.

Division of the
Natural Day.

As to the Division of the Natural Day, Note, the Ancient Athenians began their Day from Sun-set; the Chaldeans, Jews, and Babylonians, from Sun-rise; the Egyptians and Romans, from Mid-night; the Umbrians, from Noon; the Italians reckon 24 Hours, beginning from the setting of the Sun; the Persians divide the Natural Day into 4 Parts, from Sun-rising to Noon, from Noon to Sun-set, from Sun-set to Mid-night, and from Mid-night to Sun-rise. And the Custom we have of beginning the Natural Day at 12 a Clock at Night, had its Original from the Egyptians and Ancient Romans, who began it at that Time, from whom it was communicated to us; but in Italy, (as I have said before) Bohemia, Poland, &c. their Account is from Sun-set to Sun-set; and in Arabia, from Noon to Noon.

Division of the
Natural Day, ac-
cording to Macro-
bius.

Macrobius divides the Natural Day thus; First, that part of the Day which begins at Mid-night, till the Second, called in Latin, *Gallicinium*, or Cock's Crow; the Third, *Canticinium*, the space between the first Cock and break of Day; the Fourth, *Diluculum*, the Twilight, or dawn of the Day; the Fifth, *Mane*, the Morn, or Morning; the Sixth, *Meridies*, Noon, or Mid-day; the Seventh, *Pomeridies*, the Afternoon; the Eighth, *Serum diei*,

diei, Sun-set; the Ninth, *Suprema Tempestas*, the Evening Twilight; the Tenth, *Vesper*, or Evening; the Eleventh, *Prima Lux*, or first Candle-time; the Twelfth, *Nox concubia*, the second Candle-time, or Bed-time; the Thirteenth, *Nox intempesta*, the Quiet, or Dead-time of Night.

For understanding the First Hour, Third Hour, Sixth Hour, Ninth Hour, Twelfth Hour, and Even-tide, mentioned in Scripture, and observed by the *Jews*, Note, that they divided their Day (which was only from Sun-rise to Sun-set, called an Artificial Day) into

Division of the
Jews Artificial
Day.

Four Quarters, allowing to every Quarter Three Hours, accounting the First Hour of the First Quarter, at the Rising of the Sun, and the First Hour of the Second Quarter, they called the Third Hour; and the Third Hour of the Second Quarter, they called the Sixth Hour, which was Mid-day; the Third Hour of the Third Quarter they called the Ninth Hour; and the Second Hour of the Fourth Quarter, the Eleventh Hour; and the Twelfth and last Hour of the Day, they call Even-tide. Thus having treated of the Natural and Artificial Day, and whence the Days of the Week derived their Name, I think it not improper to set forth the Names of several of the Principal Feast-Days and Times in the Year, which are still retained in the Church of *England*, altho' the Religion is not approved of in which they were Establish-ed. The First of *January* is called *New-Years-Day*, as beginning the Year; the Sixth is called the *Epiphany*, which Word comes from the *Greek*, and signifies an Apparition; it is also called *Twelfth-Day*, being the Twelfth Day after Christ's Nativity. *February* the Second is

The Names of the
chief Feast - Days
of the Year.

called *Candlemas-Day*, because heretofore just before Mass was said that day, the Church blessed Candles for the whole Year, and went in Procession with hallowed Candles in their Hands. *Shrove-tide* signifies the time of Confessing, for our Ancestors used to say, *We will go to Sbrift*, instead of, *We will go to Confession*, and the Name still remains with us. *Ashwednesday* is so called from the Ancient Ceremony of blessing Ashes on that day, wherewith the Priest signed the People with a Cross upon their Foreheads. *Maunday Thursday* was so called, *quasi Mandatum*, the first Word of the Antiphon, anciently sung in all Churches on that day. *Easter* is from *Oriens*, (i. e. the East, or Rising) one of the Titles of Christ. *Dominica in albis* (commonly called *Low-Sunday*, as the Octave of *Easter-Day*) had its Name from the *Catechumens*, or *Neophytes* white Garments, which they put on at their Baptism, and solemnly put off with this day. *Rogation-Day*, *Dies Rogationum*, or *Gang-Week*, is so termed because of the especial Devotion of Prayer and Fasting formerly enjoined by the Church to all Men, for a Preparative to the joyful Remembrance of Christ's glorious Ascension, and the Descending of the Holy Ghost in the form of Cloven Tongues shortly after. And in that respect the Solemnization of Carnal Matrimony was forbidden from the first day of the said Week until *Trinity Sunday*, as it was also in the Time of *Advent*, wherein our Ancestors reposed a kind of Reverence for the approach of these solemn Feasts. In some Parts of *England* it is called *Cruys-Week*, i. e. Cross-Week, because on those days Priests in their Procession carried the Cross before them. (The *Belgians* call it by this Name still.) But
in

in some other Parts of *England*, it is called *Gang-Week*, from the Ganging or Going in Procession, and the Perambulations formerly used. *Pentecost*, in *Greek*, signifieth the Fiftieth, being the fiftieth day after the Resurrection; but it is by Custom called *Whitsunday*, from the *Cathecumens*, being anciently cloathed in White, and admitted on the Eve of this Feast to the Sacrament of Baptism. The old *Saxons* called *Wied-Sunday*, i. e. *Holy-Sunday* in that Language, which also may have been one occasion of this Name. *Michaelmas* is from a solemn Mass that used to be performed, *September* the 29th, with particular Commemoration of St. *Michael* the Archangel, and of all the Nine Orders of Holy Angels; and it is sometimes called the Dedication of St. *Michael*, from the dedicating a Church in *Rome* to him by Pope *Boniface*. *All-hallows-Day* was a Solemnity in Memory and Honour of all the Saints. *Christmas* was so named from the Mass celebrated on that day to the Honour of Christ. *Childermass-Day* had its Name from the Mass which that day commemorated those Children slain by *Herod*, and therefore called *Childrens-Mass*, and the day *Childermass-Day*. And *Ember-Days* (to be found in every Almanack) had their Name from an Ancient Religious Custom of eating nothing on those days 'till Night, and then only a Cake baked under the Embers or Ashes, which was called *Panem Subcineritium*, *Ember-Bread*.

Of the Science of *Astronomy*, you may read many

AUTHORS,

Of the Ancients, *Plato*, *Proclus*, *Aristotle*, *Averro*, *Ptolomey*, *Aquilinus*, *Ritius*, *Albategnus*, *Johannes Regiomontanus*, *Tebith*, *Alubasen*, *Alfraganus*, *Rabbi Levi*, *Zacutus Azarchelles*, *Hay Benrodan*, *Shoner*, *Appion*, *Orontius*, *Cardan*, *Purbach*. *L. de Mountroyal*, *Blanchin*, *Rhinold*, *Ganric*, *Fricastor*.

Of the Modern, *Greenwood's Astronomy*, *Hyginus*, *Of the Celestial Signs*; *Peucer De variis Divinationum generibus*, *Piccolomini's Treatise of the Fixed Stars*.

See also *Copernicus De Revolutionibus Orbium Cælestium*, *Calcagninus's Works in Italian*; *Bassantin's Astronomical Discourses*, *Ranzovius's Excellency of Astronomy*, *Seller's Atlas Cælestis*; where you may see the Image of each Celestial Sign in both Hemispheres, and the form of the Asterisms.

See also *John Greaves's Hypothesis of the Planets*, &c.

Of ASTROLOGY.

ASTROLOGY hath only this small difference from Astronomy, that is to say, Astronomy investigateth the reason of the variety of Heavenly Motions, the diversity of Circles, Asterisms, Risings and Settings of the Stars, and the like; and Astrology discourseth of the variety of Constellations, Planetical Aspects, disposing of the Houses; and by these and their Dispositions, conjectureth of future Occurrences, undertaking to erect Celestial Figures, and to describe the Measures, Motions, Shapes, Number, Nature and Reciprocal Harmony, and Influence of the Stars over Men. This is called the Divining or Foretelling part, otherwise termed Judicial Astrology, which treats of the Revolution of the Years of the World, of Nativities, of Horary Questions, and by what sort of means to foretel and know future Events, and the Secrets of Divine Providence, thereby to avoid ill Success, and secure the Undertaker of Prosperity; they alledging, the Influences do not compel, but incline only, yet *Zoroastes*, *Pharaoh*, *Nebuchadonozar*, *Cæsar*, *Crassus*, *Pompey*, *Diotharus*, *Nero*, *Julian* the Apostate, &c. addicted to Astrology, were deceived by the Errors of their own Art. It is an Ancient Art, it being well known to the *Chaldeans* and *Egyptians*, who were great Proficients therein, even before our Saviour's Time, tho' there were some difference among the Professors in their Fundamentals of this Science. *Berosus* excelled in Astrology, wherefore the *Athenians*, for his Divine Prognostications, erected him a Statue

In *Alexandria*, a certain Tribute was Assessed on Astrologers, called *Blacenonium*, which signified Folly.

Judicial Astrology.

Astrological Tenet.

tue with a golden Tongue, set up in their Publick Schools, as saith *Pliny*, Lib. 7. Cap. 37.

Having spoke in *ASTRONOMY* of the Twelve Signs of the Zodiack, I shall here speak only of their Division into

Four TRIPLICITIES.

Fiery,	} Signs are {	♈ ♎ ♊	} Hot and Dry.
Airy,		♊ ♋ ♌	
Earthy,		♋ ♍ ♏	
Watry,		♏ ♐ ♑	
			Hot and Moist.
			Cold and Dry.
			Cold and Moist.

Now as to the Description and Signification of the Twelve SIGNS.

Signification of
the Sign Aries.

♈

Aries is a Masculine, Diurnal, Cardinal, Equinoctial, Easterly Sign of the Fiery Triplicity, Hot and Dry, the Day-House of *Mars*. The Persons signified thereby are of a mean Stature, lean Body, of a long Visage, Hair Curling, and often of a white or sandy Colour. As to Places it signifies Sandy, Moorish Grounds, hilly or unfrequented Places, &c. Places where Sheep or small Cattle are kept. In Houses it signifies the upper Part, or Covering thereof, or Stables where small Beasts are kept.

Signification of
the Sign Taurus.

♉

Taurus is a Feminine, Nocturnal, Melancholy, Domestical, Bestial, and Furious Sign, Cold and Dry; the first of the Earthy Triplicity. It represents one of short Stature, broad Forehead, great Eyes, large Mouth, short fat Hands, a well set Person, Hair black, and Complexion brown. It signifies Stables, Cow-Houses, Cellars, &c. And in the Fields, Pastures, and plain Corn-Fields.

Gemini

Gemini is a Masculine Sign, Hot and Moist, Diurnal, Aerial, Humane, Double Bodied; the first of the Airy Triplicity. It personates an upright, tall, straight, well-composed Body, of a Sanguine Complexion, long Arms, Hands and Feet short, Hair black, an Hazle-Eye, of an ingenious Fancy and good Understanding. It signifies curious Rooms that are Hung and Wainscotted; Play-Houses, Halls, or Dining-Rooms; Chests, Trunks, and Store-Houses, and high Places. In the Fields, it signifies Hills and Mountains, &c.

Signification of
the Sign Gemini
II

Cancer is a Feminine, Nocturnal, Phlegmatick Sign, by Nature, Cold and Moist, of the Watry Triplicity, the only House of *Luna*. It denotes a Person of middle Stature, his Complexion, White and Sickly; his Visage, Oval; his Hair, Dark-brown. It signifies moist, watry Places; also the Sea and Navigable Rivers; Springs, Brooks, and Marshy Grounds. In Houses, it signifies Sinks, Cellars, Wash-Houses.

Signification of
the Sign Cancer,
♋

Leo is a Sign, Masculine, Diurnal, Bestial, Cholerick, and Barren; a Commanding, Kingly Sign, Hot and Dry, the second Sign of the Fiery Triplicity; the only House of the Sun. Persons that are born under *Leo*, are generally of a full large Body, Courageous and Stout, Hair of dark Flaxen, or yellowish; great Head, goggle Eyes, of a generous Disposition, an aspiring Brain, and an active Body. As to Places, it signifies Woods, Forests, and desert Places, Rocks, Castles, Forts, and all inaccessible Places; Kings Palaces. And in Houses, Ovens, Furnaces, and Places near the Fire.

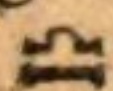
Signification of
the Sign Leo,
♌

Virgo is a Feminine, Nocturnal, Melancholy, and Barren Sign, and the second of the Earthy Triplicity. It generally denotes one of

Signification of
the Sign Virgo.
♍

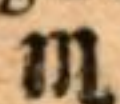
of a slender Body, and of a middle Stature, a lovely brown Complexion, great Eyes, thick black Hair; one of an ingenious Wit, much given to Learning. It signifies Closets, Studies, Musæums, and also Corn-Fields, Malt-Houses, Dairy-Houses, &c.

Signification of
the Sign Libra.



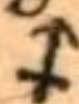
Libra is a Sign, Masculine, Cardinal, Equinoctial, Diurnal, Sanguine, and Humane, Hot and Moist; Western, and of the Airy Triplicity. Persons signified are generally well-composed, comely, straight Body'd, of round and beautiful Visage, Hair of a Flaxen, or yellowish Colour, grey Eyes; and in Age have Pimples and high Colour, but Courteous, Impartial, and Just in their Actions. It signifies sandy and gravelly Places. In the House, Garrets and upper Chambers, also Out-House, Barns, &c.

Signification of
the Sign Scorpio.



Scorpio is a Feminine, Nocturnal, Cold, and Phlegmatick Northern Sign, of the Watry Triplicity. It denotes a strong corpulent Body, of short Stature, big Limb'd, Strong and Active, sad brown Hair, Crisping, a dusky muddy Complexion, short thick Neck, and Body hairy, one of subtle and reserved Thoughts, naturally Willful, Malicious, False, Deceitful. It signifies all Muddy and Moorish Grounds, Orchards, Gardens, Vineyards, and Ditches, ruinous Houses. In Houses, the lower Rooms, Kitchens, Wash-House, &c.

Signification of the
Sign Sagittarius.



Sagittarius is a Sign, Masculine, Cholerick, and Diurnal, by Nature, Hot and Dry, of the Fiery Triplicity. It generally denotes one of a tall, upright, straight, well-proportioned Body, an Oval Visage, a ruddy Sanguine Complexion, broad Forehead, his Hair of a Brown or Chestnut Colour, quick-sighted, and generally good Horsemen. It signifies Stables, high

high Places, Hills and Mountains. In Houses it signifies upper Rooms, and Places near the Fire.

Capricorn is a Feminine, Nocturnal, Melancholly, Solstitial, Moveable, Cardinal, and Southern Sign of the Earthy Triplicity. It naturally presents one of little Stature, a dry lean Body, of a whitely Complexion, thin Face, long Neck, narrow Chin, black Hair, but little on the Beard. It signifies Places where Cattle are put, and Implements of Husbandry put up; also Barren, Thorny, and Fallow Fields. In Houses, low Rooms near the Earth.

Signification of the
Sign Capricorn.
♑

Aquarius is a Masculine, Diurnal, Fixed, Sanguine, and Humane Sign, of the Airy Triplicity. It denotes one of a strong, well-composed Body, not very tall, but fleshy, the Visage Oval, of a clear Skin, and Sanguine Complexion, generally sandy Flaxen Hair. It signifies hilly Grounds, Mines, and Quarries of Stone, and Places digged up. In Houses it signifies the upper Part, as Roofs, Eaves, &c.

Signification of the
Sign Aquarius.
♒

Pisces is a Feminine, Nocturnal, Phlegmatick, Northerly, Double Bodied Sign, the last of the Twelve, and of the Watry Triplicity. The Persons signified are generally of a low Stature, not decent, broad Face, pale Complexion, fleshy Body, Hair of light Brown. It signifies watry Places, Fish-Ponds, Water-Springs, Water-Mills, Moorish moist Grounds, Caves, &c. In Houses, Pumps, Wells, or any Place near Water.

Signification of the
Sign Pisces.
♓

PROPERTIES and INFLUENCES of the PLANETS.

♄ *Saturn* denotes in general, Lands, Houses, Country-Men, ancient People, &c.

♃ *Jupiter* signifies Judges, Divines, Senators, Riches, Law, Religion, &c.

♂ *Mars* signifies Soldiers, Physicians, War, Strife and Debate, Theft, and all Cruelty, &c.

☉ *Sol* signifies Honour, Greatness, Noble Persons of all Degrees.

♀ *Venus* denotes Women, Pleasure, Pastime, Beauty, Mirth, all kinds of Delight, Perfumes, &c.

☿ *Mercury* denotes all kinds of Scribes, Secretaries, Mathematicians, Servants, &c.

☾ *Luna* signifies Women in general, and all common and vulgar Persons, &c.

Dragon's Head
and Tale.

To these Planets are added two certain Nodes or Points, called the *Dragon's Head* ♁ and *Dragon's Tale* ♂.

Houses of the
Planets.

The Planets have allowed them every one, except *Sol* and *Luna*, two Signs for their Houses; to *Saturn*, ♄ and ♅; to *Jupiter*, ♃ and ♄; to *Mars*, ♂ and ♁; to *Sol*, ☉; to *Venus*, ♀ and ♁; to *Mercury*, ☿ and ♁; and to *Luna*, ☾.

The Planets, by their continual Motion thro' the Twelve Signs, make several Angles or Aspects, the most forcible of which are these Five,

Five Aspects.

♂ *Conjunction*, * *Sextile*, □ *Quadrant*, △ *Trine*, & *Opposition*.

Conjunction,
what.

A *Conjunction* is when two Planets are in one and the same Degree and Minute of a Sign; and this is either good or bad, as the Planets are either Friends or Enemies.

A *Sextile* Aspect is when two Planets are two Signs, or 60 Degrees distant, as γ in 15 Degrees of ν , and ζ in 15 Degrees of Π ; here *Jupiter* is in a *Sextile* Aspect to *Saturn*. This is an Aspect of Friendship.

*
Aspect, what.

A *Quadrate* Aspect is when two Planets are 3 Signs, or 90 Degrees distant, as *Mars* in 10 Degrees of *Taurus*, and *Venus* in 10 Degrees of *Leo*; this particular $\square$ Aspect is of imperfect Enmity, and Astrologers say, that the Persons signified thereby may have Jars at some times, but such as may be reconciled again.

$\square$
Aspect, what.

A *Trine* Aspect is when any two Planets are 4 Signs, or 120 Degrees distant, as *Mars* is in 12 Degrees of *Aries*, and *Sol* in 12 Degrees of *Leo*. Here *Sol* and *Mars* are said to be in *Trine* Aspect. And this is an Aspect of perfect Love and Friendship.

$\triangle$
Aspect, what.

An *Opposition* is when two Planets are Diametrically opposite, which is when they are 6 Signs, or 180 Degrees, (which is one half of the Circle asunder.) And this is an Aspect of perfect Hatred.

$\circ$
Aspect, what.

A *Partile* Aspect is when two Planets are in a perfect Aspect to the very same Degree and Minute.

Partile Aspect.

Dexter Aspects are those which are contrary to the Succession of Signs, as a Planet in *Aries* casts his *Sextile Dexter* to *Aquarius*.

Dexter Aspect.

Sinister Aspect is with the Succession of Signs, as a Planet in *Aries* casts his *Sextile Sinister* in *Gemini*.

Sinister Aspect.

Application of the Planets is performed three ways; 1. When a light Planet being direct and swift in Motion, applies to a Planet more ponderous and slow in Motion, as *Mercury* in 8 Degrees of *Aries*, and *Jupiter* in 12 Degrees of

Application of the Planets.

of *Gemini*, and both direct; here *Mercury* applies to a *Sextile* of *Jupiter* by direct Application; 2. When they are both Retrograde, as *Mercury* in 20 Degrees of *Aries*, and *Jupiter* in 15 Degrees of *Gemini*; here *Mercury*, the lighter Planet, applies to the *Sextile* Aspect of *Jupiter*, and this is by Retrogradation; 3. When one of the Planets are direct, and the other Retrograde; as suppose *Mercury* were Retrograde in 18 Degrees of *Aries*, and *Jupiter* direct in 14 Degrees of *Gemini*, here *Mercury* applies to a *Sextile* of *Jupiter* by his Retrograde Motion.

Prohibition.

Prohibition is when two Planets are applying either by Body or Aspect; and before they come to their *Partile* Aspect, another Planet meets with the Aspect of the former, and so prohibits it.

Separation.

Separation is when two Planets have been lately in Conjunction or Aspect, and are separated from it.

Translation.

Translation of Light and Vertue, is when a lighter Planet separates from the Body or Aspect of a more weighty one, and immediately applies to another superior Planet, and so translates the Light and Vertue of the first Planet to that which he applies to.

Refrenation.

Refrenation is when a Planet is applied to the Body or Aspect of another; and before he comes to it he falls Retrograde, and so refrains by his Retrograde Motion.

Combustion.

Combustion. A Planet is said to be Combust of *Sol*, when he is within 8 Degrees, 30 Minutes of his Body, either before or after their Conjunction; but a Planet is more afflicted when he is applying to his Body, than when he is separating from Combustion.

Reception

Reception is when two Planets are in each others Dignities, and it may be either by House, Exaltation, Triplicity, or Term.

Reception.

Retrogradation is when a Planet moves backwards from 20 Degrees to 9, 8, 7. and so out of *Taurus* into *Aries*.

Retrogradation.

Frustration is when a swift Planet applies to the Body or Aspect of a superior Planet; and before he comes to it, the superior Planet meets with the Body or Aspect of some other Planet.

Frustration.

Peregrine is when a Planet is posited in a Sign, wherein he hath no Essential Dignities.

Peregrine.

Under the Sun Beams. A Planet is said to be so 'till removed 17 Degrees from his Body.

Under Sun Beams.

Void of Course. A Planet is said to be so, when separated from the Body or Aspect of another Planet, and doth not apply to the Body or Aspect of another Planet while he remaineth in that Sign.

Void of Course.

Swift of Course, is when a Planet moves more in 24 Hours than his mean Motion; and he is said to be

Swift of Course.

Slow of Course, when he moves less in 24 Hours than his mean Motion.

Slow of Course.

Cazimi. A Planet is said to be in *Cazimi*, or the Heart of the Sun, when he is within 16 Minutes of his Body, in respect of Longitude and Latitude.

Cazimi.

Besieging. A Planet is said to be besieged when he is between the Bodies of *Saturn* and *Mars*.

Besieging.

Oriental is when a Planet riseth before the Sun, and may be seen after Sun-rising.

Oriental.

Occidental is when a Planet sets after the Sun and may be seen after Sun-set.

Occidental.

Direct.

Direct. A Planet is direct when he moves according to the Succession of Signs, and out of 5 Degrees to 6, 7, &c.

Stationary.

Stationary is when a Planet moves not at all, which they do before and after Retrogradation.

Increasing in Light.

Increasing in Light is departing from Sol, or Sol from him.

Longitude and *Latitude* of a Planet, also *Declination*, *Right* and *Oblique Ascension*, &c. See before in the *Astronomical Definitions*.

The KINGDOMS and CITIES under the Twelve Signs and Seven Planets.

Kingdoms and Cities under γ and δ

Under *Aries* and *Mars*, are *England*, *France*, *Germany*, *Silcsia* the Higher, *Polonia*, *Denmark*, *Burgundy*, *Syria*. Of Cities, *Ancona*, *Capua*, *Naples*, *Ferrara*, *Florence*, *Verona*, *Bergamo*, *Lindaw*, *Padua*, *Marseilles*, *Epidaure*, *Cracow*, *Augustan*, *Saragoza*, *Wenieza*.

Kingdoms and Cities under δ and η

Under *Taurus* and *Venus*, are *Russia*, *Polonia* the Great, the North Part of *Swedeland*, *Lorrain*, *Campania*, *Helvetia*, now *Switzerland*, *Rhetia*, *Franconia*, *Parthia*, *Persia*, *Ireland*, *Cyprus*. Of Cities, *Bononia*, *Panormus*, *Mantua*, *Sena*, *Carolstadt*, *Herbipolis*, *Nantz*, *Gnesna*.

Kingdoms and Cities under η and θ

Under *Gemini* and *Mercury*, are *Sardinia*, *Lombardy*, *Brabant*, *Flanders*, *Hyrcania*, *Armenia*. Of Cities, *London*, *Corduba* in *Spain*, *Viterbium*, *Tournay*, *Lorrain*, *Hasford*, *Bruges* in *Flanders*.

Kingdoms and Cities under θ and ι

Under *Cancer* and *Luna*, are *Scotland*, *Granada*, *Burgundy*, *Holland*, *Zealand*, *Prussia*, *Bythinia*, *Calchis*, *Carthage*. Of Cities, *Constantinople*, *Tunis*, *Venice*, *Luca*, *Pisa*, *Millain*, *Vincentia*, *Bern*, *York*, *St. Andrew's* in *Scotland*, *Lubec*, *Wittemberg*.

Under

Under *Leo* and *Sol*, are *Gallia Togata*, the *Alps*, *Italy*, *Sicily*, *Apulia*, *Bobemia*, Part of *Turkey*, *Sabina*, *Chaldea*, *Orchinia*. Of Cities, *Damasco*, *Syracusa*, *Rome*, *Ravenna*, *Cremona*, *Confluente*, *Prague*, *Lintz*, *Crimisium*.

Kingdoms and
Cities under
♌ and ☉

Under *Virgo* and *Mercury*, are *Greece*, *Achaia*, *Crete*, *Carinthia*, *Arthesina*, the Duke-
dom of *Athens*, *Mesopotamia*, *Babylon*, *Assyria*. Of Cities, *Ferusalem*, *Corinth*, *Rhodes*, *Papia*, *Signia*, *Brundusium*, *Novaria*, *Lyons*, *Paris*, *Basil*.

Kingdoms and
Cities under
♍ and ☿

Under *Libra* and *Venus*, are *Austria*, *Alsa-
tia*, *Livonia*, *Sabaudia*, *Delphinat*, *Thusia*, *Se-
res*, *Caspia*, *Thebaida*, *Sundgavia*. Of Cities, *Lisbon*, *Landaw*, *Suesam*, *Placentia*, *Felkirk*, *Spiers*, *Frankford at Mayn*, *Wimpina*, *Austria*, *Antwerp*, *Landshut*.

Kingdoms and
Cities under
♎ and ♀

Under *Scorpio* and *Mars*, are *Norway*, *Ba-
varia* the Upper *Metagony*, *Cappadocia*, *Mauri-
tania*, *Fez*, *Gethulia*. Of Cities, *Algiers*, *Va-
lencia* in *Spain*, *Urbine*, *Pestorium*, *Tarrisum*, *Forum Julium*, *Messana*, *Monacum*, *Ghent*, *Franckford upon Oder*, *Aichstadt*.

Kingdoms and
Cities under
♏ and ♂

Under *Sagittary* and *Jupiter*, are *Spain*, *Dal-
matia*, *Sclavonia*, *Hungary*, *Moravia*, *Misnia*. Of Cities, *Toledo*, *Mutina*, *Narbon*, *Avignon*, *Colonia*, *Agrippina*, *Studgardt*, *Ludenburg*, *Bu-
da*, *Gascovia*.

Kingdoms and
Cities under
♐ and ♃

Under *Capricorn* and *Saturn*, are *Macedonia*, *Illyria*, *Thrace*, *Bosnia*, *Albania*, *Bulgaria*, Part
of *Greece*, *Muscovia*, *Ethiopia*, *Media*. Of Ci-
ties, *Oxford*, *Mechlin*, *Juliacum*, *Berga*, *Bran-
denburg*, *Augusta*, *Constans*, *Derthana*, *Faven-
tia*.

Kingdoms and
Cities under
♑ and ♄

Under *Aquarius* and *Saturn*, are *Amazonia*, *Sarmatia*, *Tartary the Greater*, *Muscovia*, the
South Part of *Swedeland*, *Mosel*, *Piedmont*,
Oxiana, *Sogdiana*, *Media*. Of Cities, *Ham-
burgh*,

Kingdoms and
Cities under
♒ and ♄

burgh, Bremen, Montferat, Pifarum, Trent, Saltzburg, Ingolstadt.

Kingdoms and
Cities under
♄ and ♃

Under Pisces and Jupiter, are Cilicia, Calabrian, Portugal, Galatia, Normandy, Phasunia, Nasomina in Libya, Garamantis. Of Cities, Alexandria, Hispalis, Compostella, Parentium, Rhemes, Worms, Ratisbon.

Note, That the Milan Almanack, and many Prophecies use these Signs and Planets, to denote Countries and Cities where Events shall happen.

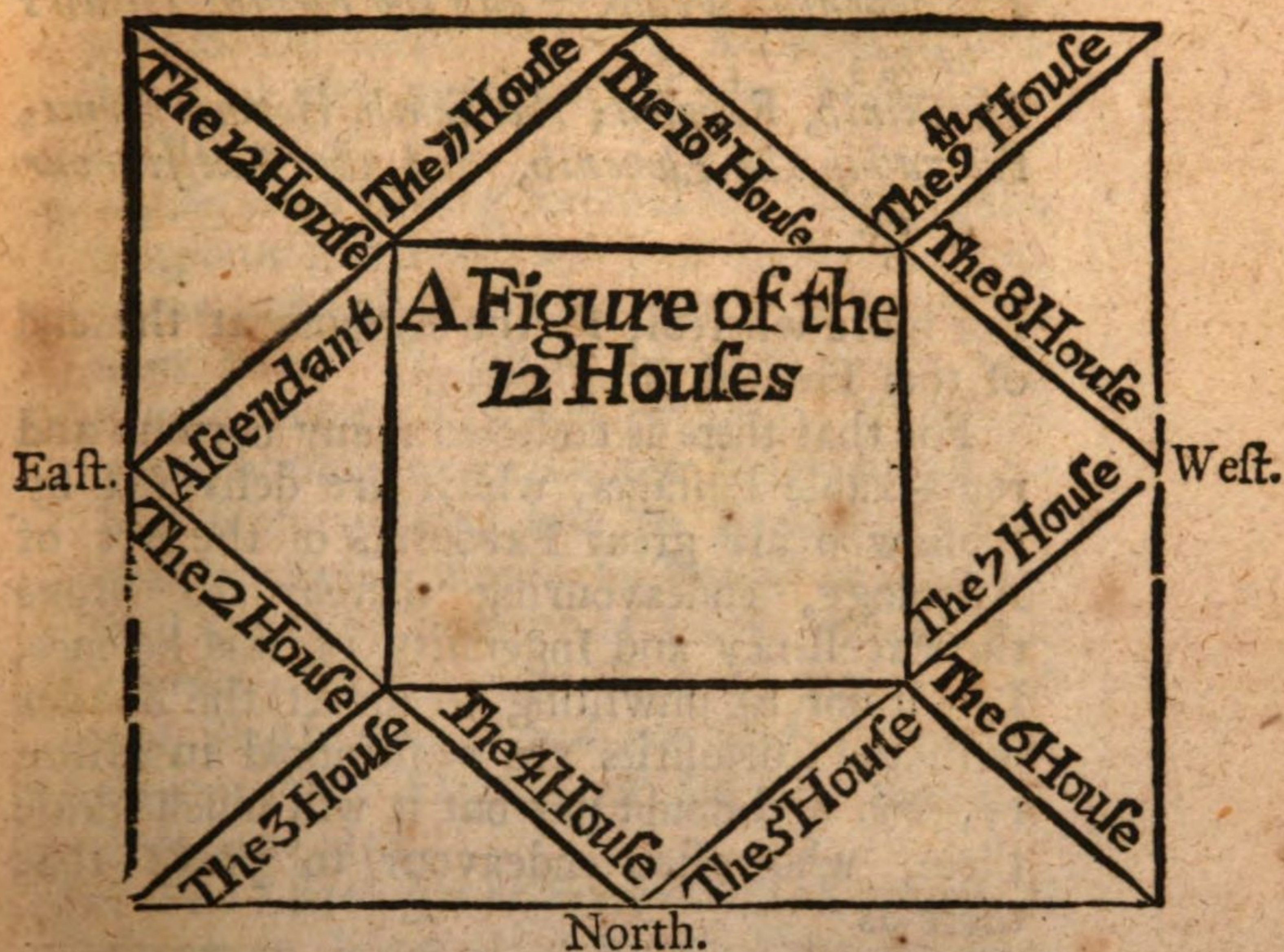
A Table shewing
what Planet rules
every Hour of the
Day and Night.

A Table shewing what PLANET Rules
every Hour of the Day and Night.

Day.												
	1	2	3	4	5	6	7	8	9	10	11	12
SUNDAY,	☉	♀	♂	☾	♂	♂	☉	♀	♂	☾	♂	☉
MONDAY,	☾	♂	♂	☉	♀	♂	☾	♂	♂	☉	♀	☉
TUESDAY,	♂	☉	♀	♂	☾	♂	♂	☉	♀	♂	☾	♂
WEDNESDAY,	♀	☾	♂	♂	☉	♀	♂	☾	♂	♂	☉	♀
THURSDAY,	♂	♂	☉	♀	♂	☾	♂	♂	☉	♀	♂	☾
FRIDAY,	♀	♂	☾	♂	♂	☉	♀	♂	☾	♂	♂	☉
SATURDAY,	♂	♂	☉	♀	♂	☾	♂	♂	☉	♀	♂	☾
Night.												
SUNDAY,	♂	♂	☉	♀	♂	☾	♂	♂	☉	♀	♂	☾
MONDAY,	♀	♂	☾	♂	♂	☉	♀	♂	☾	♂	♂	☉
TUESDAY,	♂	♂	☉	♀	♂	☾	♂	♂	☉	♀	♂	☾
WEDNESDAY,	☉	♀	♂	☾	♂	♂	☉	♀	♂	☾	♂	☉
THURSDAY,	☾	♂	♂	☉	♀	♂	☾	♂	♂	☉	♀	☉
FRIDAY,	♂	☉	♀	♂	☾	♂	♂	☉	♀	♂	☾	♂
SATURDAY,	♀	☾	♂	♂	☉	♀	♂	☾	♂	♂	☉	♀

South.

South.



The Astrologers draw their Table of the Twelve Houses as in the manner above, of which there are four Principal Angles, two of which fall equally upon the Horizon, the other upon the Meridian; that is to say, the First, (or Ascendant) the Fourth, Seventh and Tenth, The following Houses are called Succedent Houses, the other Cadent Houses; and in this manner they work, to erect an Astrological Figure for stating an Answer to all their Horary Questions. And the Signification of each House appears in the following Verses.

*The First House shews Life, the Second, Wealth
doth give;
The Third, how Brethren; Fourth, how Parents
Live.*

*Issue the Fifth; the Sixth, Diseases bring;
The Seventh, Wedlock, and the Eighth, Death's
Sting;
The Ninth, Religion; the Tenth, Honour shews;
Friendship the Eleventh, and the Twelfth our
Woes.*

For more whereof, see the Authors at the end of this Treatise of *Astrology*.

For that there is collected many curious and remarkable Passages, which are delivered by those who are great Favourers of the Art of Astrology, endeavouring thereby to prove the Excellency and Ingenuity of this Science, I shall not be unwilling to divert the Reader with the Curiosities are remembred in History, &c. and doubt not but it will much please them, who often endeavour to prove that there is

PRESCIENCE by ASTROLOGY.

1. *Anaximander* foretold the *Lacedæmonians* of an Earthquake.
2. *Hippocrates* assured the *Greeks* of a dreadful Plague would rage among them.
3. *Thales Milesius* enriched himself by foreseeing a Scarcity of Olives in the *Milesian* Fields.
4. The *Chaldeans* (who were the first Astronomers) foretold the Death and Parricide of *Agrippina* the Empress, by her own Son *Nero*.
5. *Spurina* bid *Julius Cæsar* beware the Ides of *March*, on which he was stabb'd in the *Capitol*.
6. *Socrates* foretold the Death of *Crito*.
7. *Sulla* forewarned *Caligula* of his Death.
8. *Calanus*

8. *Calanus*, an *Indian*, ascertained *Alexander the Great*, that if he entered *Babylon*, he would die there. See an Account of this Man at the very end of the Treatise of *PHYSICK*.

9. *Ascleptarian* having foretold the Death of the Emperor *Domitian*, was sent for by the Emperor, who asked *Ascleptarian* if he knew his own Fate. To which he reply'd, *Yes*, he should be torn to pieces by Dogs: The Emperor hoping to evade the Truth of all he had said, ordered him to Execution, and that his Body should be buried in a Ditch, and a great Quantity of Earth thrown upon him; but a great Rain falling, washed the Earth away, and his dead Corps was devoured by Dogs; nor did the Emperor live long after.

10. The Astrologer to *Frederick II.* Emperor of *Germany*, being asked by the Emperor why he paid such great Respect to *Rodolphus* Earl of *Hapsburg*, then but a poor Retainer at Court, answered, *Because all your Majesty's Sons being dead*, (of which the Emperor had Ten then alive) *he and his Posterity shall come to enjoy these Kingdoms which you now possess.* And *Rodolphus* was elected King of the *Romans* by the *Germans* in 1273.

11. *Christian*, an Astrologer of *Prague*, admonished *Ladislaus Jagello*, then King of *Poland*, (by a Priest who then belong'd to the King) that he should *beware of Death that Year, viz. *Anno 1434.* in which he accordingly died.

12. *Bellantius* of *Sena*, *Antonius Sirigatus*, a *Florentine*, and *Angelus de Catastiris*, a *Carmelite*, that they might demonstrate the Truth of Astrology, (saith a certain Author)

* For it is believed a Person may by his own Industry prevent what from the Influence of the Stars would have been his Destiny; for they at most do not necessitate, but incline, and by the Providence of God and Wisdom of Man, are sometimes diverted.

against which the Learned *Picus Mirandula* had published a very smart Treatise, positively told this *Picus* in their Publick Writings, that he would not out-live the 33th Year of his Age, by reason of the direction of the Ascendant in his Nativity to the Body of *Mars*; who flattered himself with Hope to prove the Art vain, or elude the Signification of Stars, and endeavouring to confirm his Writings true, wrangled with Death, which concurring exactly, confuted more than if all the World had conspired to Answer him. So *Myserinus*, an *Egyptian*, to delude the Oracle that foretold he should live but a little while, doubled the Time, by turning Nights into Days, drinking and watching continually. But though *Picus* strove with Death, it was otherwise with *Ferome Cardan*, a famous Physician and Astrologer of *Milan*, (to whom *Julius Scaliger* was so great an Enemy) for this *Cardan* having foretold the Time of his own Death, starv'd himself away to keep his Reputation, and dy'd at *Rome* in 1576. being celebrated by the Learned for a great Man.

13. *Guido Bonatus*, Astrologer at *Forley* in *Italy*, (that City being then besieged) foretold a lucky Day for *Guido*, Earl of *Montferrat*, to sally forth, rout his Enemies, and get a compleat Victory; but not without receiving a slight Wound in his Knee, which all happened accordingly. And this *Bonatus*, before the Battle, carried Tow and Eggs, &c. to dress the Wound, he foretold would be in the Fight.

14. *Regiomontanus*, in *Anno* 1475. pointed out the Year 1588, (which was 113 Years after) as a Time of most signal Revolution and grand

grand Transactions in the World. The Prophecy was first published in *Dutch*, then Paraphrased into *Latin*, and thus *Englised*.

*From Christ's Birth count One Thousand Years compleat,
And add Five Hundred more, with Eighty Eight;
That Year approaching, all Men will affright,
With woful Terrors which on them will light:
If the whole World to ruin do not run,
Or into Nothing, Land and Seas be done;
At least, most Realms shall topsy-turvy turn,
And Men on all sides lamentably mourn.*

By the Examination of the Chronicles is found that *Poland* had that Year, viz. 1588. Three Kings assuming the Title, whilst the Fourth (*Stephen Battori*) was yet unburied. *Swedeland* was in a Tumult, and lost several strong Places to the *Muscovite*. The *Muscovite* run Mad, and lost his Wits. The King of *Denmark*, viz. *Frederick II.* died. In *France* was the Barricado of *Paris*; the King's Flight from thence; the Slaughter of the Duke of *Guise*, and his Brother the Cardinal of *Lorraine*; the Death of the Queen Mother; the Poysoning of the Prince of *Conti*; the Overthrow the King of *Navarre* gave the Duke of *Mercaurs*; same time the Duke of *Savoy* surprized the *French* King's Magazine in *Saluze*; the *Sophy* of *Persia* died; the *Turks* had great Defeats in *Hungary*; in *Constantinople*, by reason of false Money paid to the *Fanizaries*, they mutiny'd, and compelled the Grand Seignior to deliver his chiefeft Favourites to be put to Death, and set Fire to the *Jews* Houses, burning above 12000 Houses; and at Home
here

here, the *Spanish* Armada was shattered by the *English*.

15. *Michael Nostredamus* of *St. Rhemy* in *France*, dying in *Anno* 1566. left a Book of Prophecies, printed in *French*, *Anno* 1555. wherein he foretold the Martyrdom of King *Charles I.* in *England*, as also the Fire of *London* in 1666, altho' 100 Years after his Death, and many other Things past, and yet to come.

16. *Sir Clement Throckmorton* bid the Duke of *Buckingham* often beware of his Life, before he was stabb'd by *Felton*.

See more in the
Treatise of Ma-
gick, just after
Witchcraft.

17. The Duke of *Guise* being at a Feast, a Note was writ and laid under his Napkin, bidding him beware of that Council, for some eminent Danger was near hand; but he neglecting to read the Paper, was slain. So *Archias*, a Tyrant in *Thebes*, having been invited to a Supper, where his Death was conspired, received a Letter from a Friend of his, containing an Advice of the Conspiracy; and being desired by him that brought it to read it out of hand, for that it concerned Matters of great Importance; he answered, *That it was no Time then to Negotiate*; and so laying it aside, was slain two Hours after. And *Charles*, the last Duke of *Burgundy*, was killed at *Nancy*, by the Treason of *Campobachio*, an *Italian*, tho' he had been advertised and forewarned thereof by *Lewis XI.* King of *France*. Also *Julius Cæsar* was not only forewarned of the Ides of *March*, as I said before, but as he was going to the Senate, received a Memorial, wherein the Conspiracy against him was

was discovered, and being willed to read it presently, for that it imported him greatly, was so troubled with the Prefs and Importunity of Suitors, that he would not attend unto it, so that he was killed the same day in the Senate-House.

And now in this Treatise of Astrology, as being a proper Place, I shall proceed to speak somewhat of the

Observations of DAYS Lucky and Unlucky.

That there be good and evil Days and Times, not only Prophane Authors, but the Sacred Scripture makes mention. See *1 Sam.* 25. 8. *Esther* 8. 17. and 9. 19, 22. *Eccles.* 14. 14. And we read the Fourteenth Day of the First Month was a blessed and memorable Day amongst the Children of *Israel*. See *Exod.* 12. 18, 40, 41, 42, 51. and 13. 4. *Levit.* 23. 5. *Numb.* 28. 16. *Four hundred and thirty years being expired of their dwelling in Egypt, even in the self same day departed they thence.* As to evil Days and Times, see *Amos* 5. 13. and 6. 3. *Eccles.* 9. 12. *Psal.* 37. 19. *Obad.* 12. *Jer.* 46. 21. and *Job* hints it in cursing his Birth-day, *Cap.* 3. ver. 1. to 11.

There is to be seen in several *Roman* Catholic Prayer-Books, being Manuscripts (written upon Vellum, before Printing was found out, some of them as ancient as *Henry VI.* or *Edward IV.*'s Time) a Kalendar wherein were inserted the unfortunate Days of each Month, as in the following Verses.

JANUARY,

JANUARY. *Prima dies mensis, & septima truncat ut ensis.*

FEBRUARY. *Quarta subit mortem, proster- nit tertia fortem.*

MARCH. *Primus mandentem, disrumpit Quarta bibentem.*

APRIL. *Denus & undenus est mortis vulnere plenus.*

Ex re & lædo. MAY. *Tertius Occidit, & septimus ora * re- lidit.*

JUNE. *Denus pallescit, Quindenus fœdera nescit.*

JULY. *Terdenus maclat, Julij denus labe- faclat.*

AUGUST. *Prima necat fortem, perditque Se- cunda cohortem.*

SEPTEMBER. *Tertia Septembris, & denus fert mala membris.*

OCTOBER. *Tertius & denus, est sicut mors alienus.*

NOVEMBER. *Scorpius est quintus, & ter- tius est vite tinctus.*

DECEMBER. *Septimus exanguis, virosus denus ut anguis.*

The Tenth Verse is intolerable, and might have been amended thus,

Tertia cum dena, fit sicut mors aliena.

If any should object that *Deni* is only the Plural, the admirable *Chronogram* upon King Charles the Martyr will be excuse for it.

*Ter deno, Fani, Lunæ, Rex (sole cadente)
Carolus exutus solio, sceptroque secure.*

The *Roman* Histories tell us that, that very day four Years the Civil Wars were begun by *Pompey* the Father, *Cæsar* made an end of them with his Sons, *Cneus Pompeius* being then slain, and it being also the last Battle *Cæsar* was ever in; and the *Romans* accounted *February* the 13th an unlucky Day, for on that day they were overthrown by the *Gauls* at *Allia*, and the *Fabij* attacking the City of the *Veji* were all slain save one.

Feb. 13. unlucky to the Romans.

Our Historians say *Normandy* was conquered from Duke *Robert* by *Henry I.* that day 40 Years the *Normans* had won *England*.

The *Jews* accounted *August* the 10th an unfortunate Day, on which day the first Temple was consumed with Fire by *Nebuchadnezzar*, their second destroyed by *Titus* the Son of *Vespasian*. The Treasury of the Times, says the 8th of *Loyon* (*August*) the very same day 679 Years one after another.

Aug. 10: unlucky to the Jews.

The Kalendar to *Ovid's Fastorum* says,

April auspicious to the Grecians.

Aprilis erat Mensis Græcis auspiciatissimus.

A most auspicious Month to the *Grecians*.

See *Weaver*, p. 458. the old Rhymes concerning the *Scots*.

Erly in a Morneuing

In an evill Tyming,

Went they from Dunbarre.

Scots Rhyme.

Horace, Lib. 2. Ode 13. Cursing the Tree that had like to have fallen upon him, says,

Ille nefasto te posuit die.

In-

Intimating that it was planted in an unlucky Day.

Dec. 28. unlucky.

The Christians have a Custom of observing unlucky Days, especially *Childermass-Day*; and *Comines* tells us that *Lewis XI.* would not debate any Matter on that Day, but accounted it a sign of great Misfortune towards him, if any Man communed with him about his Affairs, or troubled him with any Matter whatsoever upon this Day. Those Days which the *English* account unlucky are these following, viz. *January* the 1st, 2d, 4th, 5th, 10th, 15th, 17th, and 19th; *February* the 8th, 10th, and 17th; *March* the 15th, 16th, and 19th; *April* the 16th and 21st; *May* the 7th, 11th, and 20th; *June* the 4th and 7th; *July* the 15th and 20th; *August* the 19th and 20th; *September* the 6th and 7th; *October* the 5th; *November* the 15th and 19th; *December* the 6th, 7th, and 9th.

April the 6th fortunate to Alexander the Great.

On the 6th of *April*, *Alexander* the Great was born; upon the same day he afterwards conquered *Darius*, won a great Victory at Sea, and died the same day. On the same day *Philip* his Father took *Potidea*; *Parmenio* his General gave a great Overthrow to the *Illyrians*, and his Horse was Victor at the *Olympick Games*. Therefore his Astrologers foretold him, That a Son, whose Birth-Day was accompanied with Three Victories, should prove Invincible. *Pezellius in Mellificio Historico.*

On the 6th of *April* also, the Emperor *Bassianus Caracalla* was born, and died on the same day. *Journal History.*

August the 19th Augustus.

On the 19th of *August* was the famous *Augustus* adopted; on the same day began his Consul.

Consulship; also conquered the *Triumviri*; and likewise died on the same day. *Memoirs of King Charles I. Heroes.*

The 6th of *January* was five times auspicious to *Charles Duke of Anjou*. *January the 6th to the Duke of Anjou.*

The 11th of *February* was the noted day of *Elizabeth*, Wife to *Henry VII.* who was born and died on that day. *Stow*, in *Anno 1466. 1503.*

On *January* the 31st, *Henry* the Cardinal, King of *Portugal*, was born, and 68 Years afterwards died the same day.

On *August* the 19th, *St. Louis* of *Sicily* was born, and died.

On *November* the 23d, *Francis*, Duke of *Lunenburg* was born, and died.

On *June* the 11th, *Sir Kenelm Digby* was born, fought fortunately at *Scanderoon*, and died afterwards on the same day.

The 24th of *February* was four times fortunate to *Charles V.*

On *July* the 7th, *Sir Humphrey Davenport* was born, and on that day Anniversary his Father and Mother died within a quarter of an Hour one of another. *Memoirs of King Charles I. Heroes.*

On *July* the 6th, six successive principal Branches of the Family of the *Trevors* have been born. Same *Memoirs.*

On the 14th of *October*, *Harold* King of *England* was born, and was killed on the same day at the Battle of *Hastings*, where our *William* the Conqueror got the Victory.

Raphael Urbin, the famous Painter of *Italy* (See in *PAINTING*) died on a *Good Friday*, which was the day of his Birth, *Ætatis 37. Anno 1520.*

September the 3d
remarkable to
Oliver Cromwell.

September the 3d was a remarkable day to Oliver, for on that day he got a Victory at Dunbar, on that day one at Worcester, 1651. and on that day died, Anno 1658.

Tuesday remark-
able to Thomas
Becket, Archbishop
of Canterbury.

Tuesday was a remarkable day of the Week to Thomas Becket, Archbishop of Canterbury; upon a Tuesday the Peers of England fate against him at Northampton; upon a Tuesday he was Banished; upon a Tuesday the Lord appeared to him at Pontiniac; upon a Tuesday he returned from Exile; on a Tuesday was Martyred; and on Tuesday, 1220. was Translated into the Number of Saints.

Wednesday fortu-
nate to Pope Six-
tus,

Wednesday was a fortunate day to Pope Sixtus Quintus; on a Wednesday he was born; on that day made Monk; on the same made Chief of his Order; on that day created Cardinal; on that day elected Pope, and also on that day Inaugurated.

Thursday fatal to
Henry VIII. and
his Posterity.

Thursday was a fatal day to Henry VIII. of England and his Posterity. He died on Thursday, January the 28th; King Edward VI. on Thursday, July the 6th; Queen Mary on Thursday, November the 17th; Queen Elizabeth on Thursday, March the 24th.

Friday lucky to
Gonsalvo the
Great.

Friday was a fortunate day to that great and renowned Captain Gonsalvo.

Saturday fatal to
the Temple of
Jerusalem.

Saturday was fatal to the Temple of Jerusalem, for on that day it was taken by Pompey, Herod, and Titus successively. And this day was lucky to Henry VII. of England, for on this day he achieved the Victory upon Richard III. being August the 22d, 1485; on that day entered the City of London, and he himself acknowledged he had experienced it Fortunate. And the Portuguese (in their Chronicles) report they have been always very successful on this day.

Fortunate to Hen-
ry VII.

And the Portu-
guese.

The City of *Tournay* was taken four several times upon *St. Andrew's Day* ; 1. By *Henry VIII.* of *England* ; 2. By the Emperor *Maximilian I.* 3. By the Emperor *Charles V.* 4. By the Duke of *Parma*, 1581. It stands in the *Spanish Netherlands*.

Of *Omens*, and of *Superstitious Customs*, see in the Treatise of *AUGURY*.

Having said thus much of the Observations of Days, Fortunate and Unfortunate, I will proceed to recite several Instances of the same Fortunes in *Men* and *Names*. And first of those

Persons born of low Degree, that attained to great Honours.

Rhodopus, a beautiful Woman, whilst she was Bathing, had one of her Shooes taken away by an Eagle, that drop'd it at *Memphis*, in the Lap of a great Man, named *Psamneticus* ; he admiring the Shape and Work of the Shooe, sent thro' all *Egypt* to find out, if possible, the Owner ; which having done, he marry'd her.

Rhodopus

Iphicrates the *Athenian*, was but the Son of a Cobler, and came to be Lieutenant-General to *Artaxerxes*, King of *Persia*.

Iphicrates.

Eumenes was Son of a Carter, yet was one of the chief Captains to *Alexander* the Great.

Eumenes.

Dioclesian the Emperor, was Son of a Notary, or Scrivener.

Dioclesian.

Valentinian the Emperor, was Son of a Rope-maker.

Valentinian.

Pertinax was but the Son of a Woodmonger.

Pertinax.

Maximinus was but the Son of a Smith, and was advanced to the Dignity of Emperor only for his high Stature, being 8 Foot 6 Inches,

Maximinus.

and his Wife's Bracelet served him for a Ring.
Capitolinus.

Servius Tullius.

Servius Tullius, had the Name of *Servius*, from being the Son of a Bond-woman.

Tarquinius Priscus.

Tarquinius Priscus, was Son to a poor Merchant, or rather a Pedlar, in *Corinth*.

Hugh Capet.

So saith the Treasure of the Times. See in our Chronology.

Hugo, surnamed *Capet*, the first of that Name, King of *France*, (from whom the present King thereof is descended) was, as some write, but the Son of a Butcher in *Paris*; who when *Lewis V.* Son to *Lotharius*, was poisoned by *Blanch* his Wife for Adultery, taking the advantage of the Time (then in Confusion) gathered a riotous Company together like himself, and got the Crown from the Heir *Charles*, who was Brother to *Lotharius*, and Unkle to *Lewis V.*

The Kings of *France*.

Lamissus.

Lamissus III. King of the *Lombards*, was but the Son of a common Strumpet, thrown into a Pond, (there called *Lama*, from whence he was named *Lamissus*) out of which he was taken by King *Agilmond*, then a Hunting; who seeing some Children floating in the Water, thrust his Hunting-Pole amongst them, to which this *Lamissus* gently clung, and he waisted the Infant to Shoar, who afterwards was by the People chose his Successor.

See *Carolus Canutus*, in the Catalogue of the Kings of *Denmark*, Vol. I. p. 282.

William the Conqueror.

William the Conqueror of *England*, was but the Son of a Skinner's Daughter, begot by his Father *Rollo*, Duke of *Normandy*, at the Town of *Arlet* in *France*, since which the Name of *Harlot* came up.

Tomaso Anello.

Tomaso Anello, called vulgarly *Masainello*, was but a poor Fisherman, yet after got to command all *Naples* at the Head of many Thousands.

Primislavus

Primislaus, King of *Bohemia*, was a poor Peasant.

Primislaus.

Chu was Servant to a Priest of the Idols in *China*, yet was the first Emperor of the Race of *Taminges*, (the noblest Family *China* now has) stiling himself by the Name of *Hungus*.

Chu.

Lycungus was a common Thief before he was Emperor of *China*.

Lycungus.

Chunchilungus, a *Chinese*, was at first a poor Pyrate, and afterwards made King of *Pingnan*, i. e. Pacifier of the South, having no less than 3000 Ships belonging to him.

Chunchilungus.

Agathocles was the Son of a Potter, yet advanced to be King of *Syracuse*.

Agathocles.

Abdelonymus was but a Hireling in a Garden, yet came to be King of *Tyre*.

Abdelonimus.

Caius Marius was first but a private Soldier, yet came to be seven times Consul of *Rome*, an Honour greater than that of Kings.

Caius Marius.

Bonofus, Emperor of *Rome*, had a School-Master for his Father.

Bonofus.

Pope *John XXII.* was the Son of a Currier.

Pope John XXII.

Ramirus, at first a Monk, came after to be King of *Arragon*.

Ramirus.

Semiramis was Whore to a Slave, but the King seeing and liking her, gave at her Request a days Command in the Throne, who commanding presently the King to be Beheaded, reigned Queen of *Egypt* many Years.

Semiramis.

Canguis, or *Cinguis Chan*, was a Brasier, or Blacksmith, yet came to be Law-giver to the *Scythians*.

Canguis.

Roger, a poor Priest at *Caen* in *Normandy*. Prince *Henry*, younger Brother to our King *William Rufus*, passing that way heard his Mass, which this *Roger* said so quick, that Prince *Henry* thought him a Priest fit for Soldiers,

Roger.

diers, and therefore brought him over into *England*, and recommended him to his Brother King *William*, who made him afterwards Bishop of *Salisbury*, and Lord High Chancellor of *England*; and this *Roger* grew so Rich, he built the Castles of *Salisbury*, *Vises*, *Sherburn*, *Malmsbury*, and *Newark*, and yet had 40000 Marks in ready Money left.

Pope *Nicholas* and
Pope *Sixtus* V.

Pope *Nicholas* V. was the Son of a Poulterer. *Sixtus* V. of a Hogheard. The Consul *Alphenus*, but a Taylor's Apprentice.

Sinan.

Sinan, the great Bassa in the Court of *Selymus* I. was born of base Parentage; and being an Infant was laid in the Fields, where he had his Genitals bitten off by a Sow; *Selymus* passing by, and taking notice of the extraordinary Eunuch, took the Foundling home to his Palace, and afterwards was accounted *Selymus's* right Hand.

Cardinal *Mazarine*.

Cardinal *Mazarine* was but a Yeoman, who venturing at Play all his small Stock, by the Fortune of the Dice won 1000 Crowns; after which he grew Ambitious, and at length to that great Fame he had in the World.

Lord *Cromwell*.

The Lord *Cromwell*, who was Lord High Chancellor of *England*, in the Time of King *Henry* VIII. was but the Son of a Smith.

Cardinal *Wolsey*.

Cardinal *Wolsey*, Archbishop of *York*, Lord High Chancellor of *England*, Bishop of *Winchester*, &c. had, as some say, no better Man for his Sire than a poor Butcher.

Nich. *Brakespeare*.

Nicholas Brakespeare, was born at *St. Albons*, and a Bond-man at *Langley* in *Hertfordshire*, yet afterwards came to be Pope, by the Name of *Adrian* IV.

Roger *Walden*.

Roger Walden, a poor Scholar of *Oxford*, was afterwards Archbishop of *Canterbury*, and died in the Ninth Year of King *Henry* IV.

The

The first Elector of *Mentz* in *Germany*, was the Son of a Carman. See in *HERALDRY*.

Francisco Pizarro was a Bastard, and by the poor Whore, his Mother, laid in a Church-Porch, from whence he was taken and laid in the Fields, where for some Time he sucked a Sow. Yet afterwards grown up, he went to *America*, conquered all *Peru*, and was by the King of *Spain* made Vice-Roy thereof, and Marquis of *Anatilla*.

Francis Pizarro.

The late Marshal *Vauban*, who died in *France*, *March* 30. 1707. first carried a Musket in the Regiment of *Conde*, Anno 1651. against the King of *France*, 'till Cardinal *Mazarine* persuaded him into the King's Service. He was the Son of *Urban le Prestre*, Lord of *Vauban*.

George Villers was but the third Son of a Knight, and being raised to be sworn Servant to King *James I.* came after to be Duke of *Buckingham*.

George Villers.

Sir *Francis Bacon*, Lord *Verulam*. See in *British* Historians, in *HISTORY*. Vol. I. p. 309.

Sir *Walter Rawleigh* was born at *Budely* in *Devonshire*, and having been in *Ireland*, came over again, having very good Cloaths, which was the best part of his Estate, (saith *Wanly* in his Wonders) and one day walking Abroad, met the Queen, (*viz.* Queen *Elizabeth*) who was walking likewise, she coming to a marshy Place, seemed afraid to tread there, which Sir *Walter* seeing, immediately plucked off his Plush Cloak, and spread it on the Place, she passing over took Notice of him, and afterwards advanced him, tho' he concluded unfortunate, being Beheaded for a Combination with *France*, and other Crimes he was Innocent of. The Fortune of which Man invites

Sir Walter Rawleigh

See more of him amongst the Historians in *History*, Vol. I. p. 302. and in *Navigation*, p. 215.

us to take farther Notice (as was intended) of the Unfortunate, or

The Mutability of FORTUNE in several great Personages.

If we consult with Story, we shall find that all, or most of the Roman Emperors before *Constantine* (the first Emperor that received the Christian Faith) died unnatural Deaths, but such as succeeded him, went most of 'em to their Graves in Peace, and full of Years. From *Julius Caesar* unto *Constantine*, are numbered about Forty Two Emperors, of which

Emperors unfortunate in suddain Deaths, &c.

Julius was openly murdered in the Senate-House.

Augustus was hastened to Death by his Wife *Livia*.

Tiberius by *Macro*.

Caligula was slain by *Cassius Chereas*.

Claudius was poisoned by *Agrippina*.

Nero and *Otho* laid violent Hands on themselves.

Galba and *Vitellius* were massacred by the Soldiers.

Domitian by *Stephanus*.

Commodus by *Letus* and *Electus*.

Pertinax and *Julianus* by the tumultuous Guards.

Julian's Dying-Saying was, He that would not die when he must, and he that would die when he must not, were Cowards alike.

Caracalla by the command of *Macrinus*, whom the Astrologers foretold should be his Successor.

Macrinus, *Heliogabulus*, *Alexander Severus*, *Maximinus*, *Maximus*, and *Balbiens*, all successively by the Men of War.

Gordianus by *Philip*.

Philip by the Soldiers.

Hostilianus

Hostilianus by *Gallus* and *Æmilianus*, and they by the Soldiers.

Valerianus died Prisoner in *Parthia*.

Florianus and *Dioclesianus* (the last of which quitted his Empire, and turned Gardiner) were Authors of their own ends.

Aurelianus was murdered by his Household Servants.

Gallienus, *Quintilius*, *Tacitus*, and *Probus*, fell by the Fury of the Military-Men.

The Tyrant *Aristarchus* was made a Sacrifice to the Publick Rage of the *Lacedæmonians*.

The great Warring *Pyrrhus*, King of *Epire*, was slain with a Tile by an old Woman at *Argos Peloponnesiacum*.

Cæsar the *Prætor* died putting on his Shooes.

Lucius Lepidus striking with his Foot against a Gate.

The *Rhodian* Ambassador having made an Oration before the Senate of *Rome*.

Anacreon drinking.

Torquatus eating a Cake.

Cardinal *Colonna* eating Figs.

Zeuxis the Painter laughing at an old Woman he was to finish.

Augustus performing a Compliment.

Claudius the Emperor by putting a Feather down his Throat.

The fair *Polycrete* with Joy, at the Peoples rendring excessive Thanks, having succeeded in the Embassage of a distressed People besieged.

Of the Monarchs of *England*, we find these to receive a Fate not much differing from the *Roman* Emperors, for

Kings of England
Unfortunate.

Vortiger about Anno 464. was deposed, tho' after restored.

King *Edmund* died by the Stab of a Thief, about 946.

King *Edred* was deposed, tho' after restored.

King *Edward* the younger, or Martyr, stab'd on Horseback by a Servant belonging to his Mother-in-Law.

King *Edmond Ironside* murdered at *Oxford*.

King *Hardycnute* the Dane fell down dead at a Danish Wedding in *Lambeth*.

King *Harold* was killed with many Wounds at the Battle of *Hastings* in *Sussex*.

King *William Rufus* shot (accidentally, or premeditatedly, is not known) by Sir *Walter Tyrrel*, shooting at a Deer, in *New Forest*.

King *Henry II.* died with Grief, at seeing his Son *John's* Name at the Head of the Conspirators List, who joined with his Queen and others to take away his Crown and Life.

King *Richard I.* killed at the Siege of *Chaluz* by an Arrow.

King *John* poisoned at *Swinstead* Abby.

King *Edward II.* deposed and murdered in *Berkley* Castle, by running a red hot Spit thro' his Fundament.

King *Richard II.* murdered by Sir *Piers* of *Exton*, and six other Assassins in the *Tower*, tho' the King killed four of them.

King *Henry IV.* died of an Apoplexy.

King *Henry VI.* deposed and murdered in the *Tower* by *Richard* Duke of *Gloucester*.

King *Edward V.* smothered to Death with Pillows in the *Tower*, by Sir *James Tyrrel*, *Forrest*, and *Dighton*.

King *Richard III.* killed at the Battle of *Bosworth*.

King

King *Edward VI.* died (supposed by Poison given by the Duke of *Northumberland*) at *Greenwich*.

King *Charles I.* beheaded on a Scaffold, an Act never paralleled, but in *Dardanus* King of *Scotland*, beheaded by his Subjects, *A.C. 76.*

King *Charles II.* deposed, and in extream danger of his Life, tho' by great Providence preserved.

King *James II.* died in an Exile in *France*.

But to proceed to others of lesser Character in the World, tho' of no small Note in History.

Belisarius, a Servant to one of the *Roman* Emperors, who had subdued the *Goths*, and served his Country in great Command, was yet reduced to that Necessity, as to stand by the High-way side and beg; *Date Obolum Belisario*, Give a Half-penny to *Belisarius*.

Themistocles the Champion of *Greece* died an Exile in *Persia*.

Joab, that Politick Leader, that fought the Lord's Battels, died at the Horns of the Altar.

Phocion was slain by the People of *Greece*.

See in our Treatise of Government.

Demosthenes laid violent Hands upon himself.

Pericles was many Times endangered.

Theseus, the Founder of the famous City *Athens*, was deposed from his Royalty, and imprisoned spitefully.

Aristides, *Alcibiades*, *Nicias*, and other famous Generals, were banished Ten Years by the *Ostracism*; which form of Punishment was so called, because the Name of the Party banished was writ on an Oyster-shell, and was used

Ostracism, what.

used towards such who either began to grow too Popular, or Potent among the Men of Service.

Coriolanus the Warring Roman was Exiled.

Camillus that great Warrior likewise confined to *Ardea*.

Scipio was murdered, with divers others.

Ventidius was disgraced by *Mark Anthony*, after divers eminent Services.

Agricola was poysoned with the Privy of *Domitian*.

Corbulo was murdered by the Command of *Nero*. All these six last being great Romans that lived in an Age wherein it was not lawful to be Valiant.

Gonsalvo the Great of *Spain*, after his Conquest of *Naples*, driving also the *French*, and bringing the *Italian* Potentates to the *Spaniards* Devotion, was by his Master called home, died obscurely, and was buried without Solemnity or Tears.

Christopher Columbus the *Italian*, after his famous Discovery of *America*, and two other famous Voyages, as also many great Services for the *Spaniards*, was buried at *Sevil*. The People of *Spain* proving ungrateful to his Memory, and unjust to their great Benefactor.

Guise and *Byron* in *France* are two noted and sad Examples of the change of Fortune; also *Count Wallstine* in *Germany*.

English Favourites
Unfortunate.

Pierce Gaveston, and the *Spencers* in the Time of *Edward II.* of *England*, were not so Fortunate in their Princes Love, as they was unfortunate in the Peoples hate, who forced them to be banished the Realm, and at last beheaded them.

Essex, that great Warrior under Queen *Elizabeth*, most unfortunately fell, (dying on a Scaffold)

Scaffold) tho' for some Time a Favourite of Fortune and the Queen.

Dudley of Northumberland came not much short of *Essex* in his Misfortunes.

William Duke of Suffolk, after 34 Years being employed in the *French Wars*, was at his return basely made away.

Cardinal *Wolsey*, a Man that had arrived to the Pinnacle of Humane Happiness, and Greatness, in *Henry VII.* and *Henry VIII.* Times, yet fell into Disgrace, and pined himself to Death, not without Suspicion of taking Poison.

Sir *Thomas Moor*, once Lord High Chancellor of *England*, and a great Favourite of King *Henry VIII.* yet for refusing to take the Oath of Supremacy, and disallowing the Marriage with Queen *Anne of Bulloigne*, forfeited his Head.

Sir *Francis Bacon*, Lord *Verulam*. See *British* Historians in HISTORY.

Sir *Walter Rawleigh*, once in Favour with his Prince, and thereby had a Commission to make a Discovery of a Gold Mine in *America*; yet upon his return fell into Disgrace, and lost his Life under King *James I.*

Thus Politicians are often unfortunate to themselves, for so was *Parmenio* under *Alexander*, *Sejanus* under *Tiberius*, *Cleander* under *Commodus*, *Ablavius* under *Constantine*, *Eutropius* under *Arcadius*, *Vignius* under *Frederick*, *Brocas* under *Philip*, *Cabreca* under *Peter*.

And now we come to our last Observations, which *Heylin* in his Description of *Greece* also takes Notice of, viz. the

Fatal

Fatal CONTRARIETIES in one and the same NAME.

Philip, the Father of *Alexandar*, laid the first Foundation of the *Macedonian* Monarchy, and *Philip* the Father of *Perseus* ruined it.

Baldwin was the Name of the first, and last Emperor of the *Latines* in *Constantinople*; concerning which City, it was built by a *Constantine*, the Son of *Helena*, a *Gregory* being Patriarch, and was lost by a *Constantine*, the Son of an *Helena*, a *Gregory* being then also Patriarch.

The *Turks* have a Prophecy, that as *Constantinople* was won by a *Mahomet*, so it shall be lost by a *Mahomet*.

Augustus was the first established Emperor of *Rome*, and *Augustulus* was the last.

Darius the Son of *Hystaspes* was the Restorer, and *Darius* the Son of *Arsamis* the Overthrower of the *Persian* Monarchy.

In *Albion's England* is this Observation made of the Letter *H*.

Not superstitiously I speak, but H this Letter still,

Hath been observed ominous to England's Good or Ill.

First Hercules, Hefione and Helen were the cause

Of War to Troy. Æneas Seed becoming so out-laws.

Humber the Hunne with Foreign Arms did first the Brutes invade;

Helen to Rome's Imperial Throne the British Crown convey'd.

Hengist

Hengist and Horfus did first plant Saxons in
this Isle;

Hungar and Hubba first brought Danes that
sway'd here long while.

At Harold had the Saxon end, at Hardyknute
the Dane;

Henries the First and Second did restore the Eng-
lish Reign;

Fourth Henry, first for Lancaster did England's
Crown obtain.

Seventh Henry, jarring Lancaster and York
unites in Peace;

Henry the Eighth did happily Rome's Irreligion
cease.

Near Casselles (a Town of the Spanish Nether-
lands) hath been fought three memorable Bat-
tles by three Philips, Generals on the French
side. See Morden's Geography, p. 177.

When Jerusalem was taken by the Christi-
ans, under Godfrey of Bulloigne, the German
Emperor's Name was Fredericus, the Pope's
Urbanus, the Hierosolymitan Patriarch Heracli-
us; and so also were they called when the
Christians again lost it. Teste, Roger Hovedon
in the Life of Henry II. of England.

See more in the
Treatise of Ma-
gick presently af-
ter Witchcraft.

King Henry III. of France breaking his Oath,
caused the Duke of Guise to be murdered in
his Presence, St. Clement being the Watch-word
appointed by the King to those who were to
kill him; and he himself within eight Months
after was miserably slain by a Frier named
Clement. Of Astrology have wrote these

AUTHORS,

Of the Ancients, Messabala, Manlius, Ma-
tcrnus, Heliodorus, Abenragel, Paulus, Ptolo-
mey,

mei, Campanus, Regiomontanus, Lucius Balantius, Aponensis, Roger Bacon, Guido Bonatus.

See Middleton's *Practical Astrology*, Woodward's *Astrology*, Saunder's *Astrological Judgment*.

Of AUGURY.

AUGURY is the Art of Inspection and Divination, by observing the Entrails of Birds and Beasts, and was in great Esteem among the Ancients. The *Lacedæmonians* had always an *Augur* to attend upon their Kings; and among the *Romans* was a College of *Augurs*. *Romulus* himself was a Soothsayer, and ordained that the Choice of Magistrates should be confirmed by Augury; and so fond were the Ancients of this Art, that nothing of Publick or Private Affairs should be transacted without it. In *Auruspicium* it was observed whether the Beast came willingly to the Altar or not, (See in *RELIGION*, V. I. p. 48, 49, 50.) whether the Entrails were of a natural Colour, and not Exulcerated, or whether any Part were defective or wanting; and when *Augustus* found two Galls in his Sacrifice, the Credulity of the People concluded a hope of Peace with *Anthony*, and the Amity of Persons in Choler with each other.—Because *Brutus* and *Cassius* met a Blackmoor, and *Pompey* had on a dark coloured Garment, at *Pharsalia*, these were thought Prefages of their Overthrow.—When *Grævus* was slain, the same day the Chickens refused to come out of their Coop.—So the Death of *Cæsar* was divined from the Clattering

Sundry Divinations by Accidents and Circumstances of Things.

See *Magick*.

ing of Armour in his House.—The Poisoning of *Germanicus* by the Sounding of a Trumpet of its own accord.—The like of a painted Horse on the Wall of the Palace of the Emperor *Andronicus Palæologus*, about *Anno* 1300. was judged a happy Omen to that Emperor; and his Chancellor congratulated him in the Expectation of future Triumphs, yet when *Baldwin*, Emperor of the *Latins* was beaten out of *Constantinople* by his Father, his Horse neighed after the same manner. An Owl screeching in the Senate-House, was deemed ominous to *Augustus*.—A company of Crows following *Sejanus* to his House with great Noise and Clamour, was judged to be fatal, and so indeed it proved.—*Romulus* had promised to him the Empire before his Brother, because he had seen the double Number of Vultures.—So our *William* the Conqueror, when he first step'd on Land, his Foot slipping he fell down, and got some Dirt in his Hand, which being judged an ill Sign, he said, *No, I have by this taken Possession of this Land.*—And a Swarm of Bees hovering over *St. Ambrose*, as also *Plato* the Philosopher, when Infants in their Cradles, was judged to portend great Wisdom should flow from their Mouths.

Baker in his Chronicle makes mention of the great Tempest which drove King *Philip* into *England*, *Temp. Henry VII.* which blew down the Golden Eagle from the Spire of *St. Paul's*, and in the Fall, it hit upon a Sign of the Black Eagle in *St. Paul's Church-Yard, London*, and broke it down, which was adjudged ominous to the Imperial House; and so it proved, for at his Arrival in *Spain*, this *Philip* sickened and died. In an Account from *Genoa*, dated *May* the 17th, 1711. and Printed in the News-Papers

pers at London, May 31. 1711. mention is made that an *English* Ship arriv'd at *Barcelona*, April the 17th, with Corn from *Barbary*, and that the Master caught that day in sight of the Land an Eagle which peached upon one of the Masts of the Ship, which he presented to King *Charles III.* and as the Emperor died the same day, they took this as a good Omen for his Catholick Majesty. See in the Treatises of *ASTROLOGY, MAGICK, and DREAMS.* *Auspicium q. Avispicium*, was taken from the Flight of Birds, either on the Right Hand or on the Left; and hence is the Proverb, *Avi Sinistra*, Good Luck, because in Giving or Going, the Right Hand is opposite to the Receiver's Left.

The Proverb *Avi Sinistra* how occasioned.

See the Feast *Lemuria* in Religion, Vol. 1. p. 55.

Burbury in the Relation of a Journey made by the Lord *Howard* to *Constantinople*, faith, at *Musan-Basha-Palanka*, the *Balgarian* Women strewed little bits of Butter and Salt in the Way before him, presaging and wishing them a Prosperity to their Journey and Affairs. *Vide Burbury, p. 126.*

And here it may not be improper to Note something of the Practice and Antiquity of several

Superstitious CUSTOMS and SAYINGS now in Use.

Custom of pairing Nails.

The Custom of pairing Nails, and cutting off our Hair at certain Times, is a Relick of Ancient Superstition; for the *Romans* feared to pair their Nails upon the *Nundinae*, observed every 9th day, and other certain days in the Week, according to that of *Ausonius*, *Ungues, Mercurio, &c.*

The

The Conjecturing on future Events by Spots in our Nails, is no Modern Practice; *Cardan* affirming to have discovered a Property in himself of finding therein some Signs of most Events that ever happened unto him. The Spots in the top of the Nails signify Things past; in the middle, Things present, and at the bottom, Events to come: White Specks are supposed to presage our Felicity; blue ones, our Misfortunes, and the like.

Of Spots in our Nails.

To observe the falling of Salt, proceeds from a particular Omination among the Ancients, who knowing Salt was Incorruptible, made it the Symbol of Friendship, and if it casually fell, they accounted their Amity would be of no Duration.

Of the falling of Salt.

The Custom of giving Coral to Children, and fastening it about their Necks, thereby to rub their Gums, and make an easier Passage for their Teeth, is a Practice believed to be Superstitiously Founded, as presumed, an Amulet or Defence against Fascination. For the same is delivered by *Pliny*, Lib. 32.

Of Coral for Childrens Teeth.

The refraining to kill Swallows, it being esteemed unlucky to destroy them, has no other reason for its Original, than that anciently those Birds were sacred unto the *Pennates*, or Household Gods of the Ancients, and therefore were preserved, as also they were highly honoured for being the Nuncio's of the Spring; for which reasons the *Rhodians* had a solemn Song to welcome in the Swallows. See *Ælian*.

Of not killing Swallows.

The Opinion, that it is good to have a Wolf cross the Way, and bad to have a Hare cross it, altho' it be Ancient, had no other reason for its Original, than that it may be esteemed

Of a Wolf or Hare crossing us.

fortunate to escape the first, and a loss to let the second escape us.

Of using Ivy at
Christmas.

The Custom of decking Houses with Ivy at *Christmas* Time, is but because Ivy was anciently dedicated to *Bacchus* the God of Wine, which is spent in no small Quantity at that Time.

Of breaking the
Egg-shell.

The Custom of breaking the Egg-shell after the Meat is out, hath been an Ancient Practice, and the Intent was to prevent Witchcraft, lest Witches should draw or prick Names therein, and thereby Mischief their Persons, as *Dalecampius* hath observed.

Of the True Lover's Knot.

The making a *True Lover's Knot*, is still retained in Presents of Love, and might have its Original from *Nodus Herculanus*, or that which was called *Hercules's Knot*, resembling the snaky Complication in the *Caduceus*, or Rod of *Hermes*; and in which form the Zone, or Woollen Girdle of the Bride (in Ancient Times) was fastened, as *Turnebus* observes in his *Adversaria*.

Unblest'd till they
have put on their
Girdle.

The Saying, *They are Unblest'd, until they have put on their Girdle*, may have indeed no ordinary Consideration for its Original, since by a Girdle or Cincture, are symbolically implied Truth, Resolution, and Readiness unto Action, which are Parts and Vertues required in the Service of God. According whereto we find that the *Israelites* did eat the Paschal Lamb with their Loins girded; and the Almighty challenging *Job*, bids him gird up his Loins like a Man.

Of the Cheek
burning.

The Custom to say, *Somebody is Talking of us when our Cheek burneth or gloweth*, appears to be an Ancient Conceit, being ranked among Superstitious Opinions by *Pliny*; but the first
rise

rife of it is as unknown, as the occasion of fuch a fignifying Genius.

The Custom of nourifhing Hair upon the Moles of the Face, is the Perpetuation of a very ancient Practice, and tho' now innocently us'd, may have a fuperftitious Original according to that of *Pliny* *Nævus in facie tondere religiosum habent nunc.*

Of nourifhing
Hair upon Moles.

The Practice we have to determine doubtful Matters by the opening of a Book, and letting fall a Staff, are ancient Fragments of *Pagan* Divinations.

Of opening of a
Book, &c.

The Custom of receiving the Climacterical Year of 63 as a very dangerous Year, is a very ancient Belief; *Philo*, the *Jew*, having filled up feveral Pages with things relating to this Number: and *Pythagoras* and *Plato* have been great Maintainers thereof in their Numerical Confiderations. The Opinion arifes from that Belief, that the Days of Men are ufually caft up by Septenaries, and every Seventh Year conceived to carry fome altering Character with it; as alfo the Moon (which governs Man's Body) is fupposed to be meafur'd by Sevens. And fo the Number Seven and Nine, which multiply'd into themfelves, do make 63, is commonly efteemed the Great Climacterical of our Lives.

Of the Climacte-
rical Year.

The Custom of faluting or bleffing People when they Sneeze, is generally believed to derive its original from a Difafe wherein fuch as sneezed dy'd; and this feems to be proved from *Carolus Sigonius*, who in his History of *Italy*, makes mention of a Peftilence in the time of *Gregory* the Great, that proved pernicious and deadly to thofe that sneez'd. Yet there is an elder *Æra* for this Practice, it being mention'd by *Apuleius*, who lived 300 Years

Of faluting Peo-
ple when they
Sneeze.

before *Gregory's* time, and others, as *Petronius Arbiter*, Proconsul of *Bithynia*, in the Reign of *Nero*. This Custom is not only used in *England*, but in the remotest Parts of *Africa*, and the *East*, as *Codignus* and *Pinto* in their Travels witness. The Ground of the so ancient Custom was probably the Opinion the Ancients held, that sneezing was a good Sign or bad, and therefore used to congratulate the one, and deprecate the other by this Salutation; for out of *Plutarch*, *Aristotle*, and others, we find that sneezing at certain times was held lucky, at others unlucky; and *St. Austin* testifies, the Ancients were wont to go to bed again, if they sneez'd whilst they put on their Shooes.

Of Crying Youl!
Youl! in Worces-
tershire.

In several Places, particularly on *Malverne's* Hills in *Worcestershire*, when People fan their Corn, and want Wind, they cry Youl! Youl! Youl! to invoke it; which Word (no doubt) saith *Mr. Gadbury*, is a Corruption of *Æolus* the God of the Winds. And others think it is from *Æolus* that they call the *Yule-Batch* or *Christmas-Batch*, the *Yule-Block* or *Youl-Block*, i.e. the *Christmas-Block*, as also the *Yule-Gams*, that is *Christmas-Games*, so named because about *Christmas* time the *Eastern* Winds said to be governed by *Æolus*, are then most prevalent.

Of Hailing the
Moon.

In *Herefordshire*, and some other Countries the vulgar People at the Prime of the Moon do use to say it is a fine Moon God blefs her, which may be a blind Zeal retained from the Ancient *Irish* who adored that Planet, or else might proceed from the Custom in *Scotland* (particularly in the High-Lands) where Women are used to make a Curtsey to the New Moon. And that some *English* Women do retain a Touch of this Gentilism is plain, when getting over

over and fitting astride on a Yate or Stile, the first Night of a Moon they say,

*All Hail to the Moon, all Hail to thee;
I prithee good Moon declare to me
This Night who my Husband must be.*

Perhaps the Original of nailing a Horse-shoe on the Threshold of some Peoples Doors, tho' now pretended to keep out Witches, might be from the like Custom practis'd in Rutlandshire, where stands *Burgley-House*, the ancient Seat of the *Harringtons* near *Oakham*, a fair Market Town of that County, which Lordship the Lord *Harrington* enjoyed with this Priviledge, That if any of Noble Birth came within the Precinct of that Lordship, they should forfeit as an Homage, a Shooe from the Horse whereon they rode; or else to redeem it with a Sum of Money. In Witness whereof there are many Horse-shooes nailed upon the Shire Hall Door, some being of large Size and ancient Fashion, others New and of our present Nobility, whose Names are stamp'd upon them; but there are some without any Names. That such Homage was due it appears, because there was a Suit in Law formerly commenced against the Earl of *Lincoln*, who refused to forfeit his Penalty, or pay the Fine.

Of nailing a Horse-shoe at the Door.

Of the Custom at Funerals in *Herefordshire* to hire poor People to take on them the Sins of the Deceased, whom they termed Sin-eaters: And the Practice in some Parts of *Lancashire* and *Cheshire*, on the Second of *November*, to set on a Table-Board a high Heap of Soul-Cakes (like to the Shew Bread in the Bible) where every Visitant took one, and other the like Usages I forbear to speak at large, referring

to others who have writ thereof, and now come to enumerate some few who have writ of *Augury*: Of which are these

A U T H O R S.

Amphiateus, Tyresias, Mopsus, Aphilotus, Chalcas, Romulus,

Of M A G I C K.

MAGICK took its Original and Name from the *Magusæi*, as *Suidas* believes; but the receiv'd Opinion is, That it is a *Persian* Name, and that *Magos* signifies in that Language no more than Wiseman or Philosopher.

Ceneus was worshipped amongst the *Greeks* as a God, for his skill in the Magick Art, in the Days of *Augustus* the Emperor. And so *Simon*, the *Samaritan*, was honoured at *Rome* with a Statue for his Excellency in this Art, with this Inscription, *To Simon the Holy God*. This was in the Time of *Claudius Cesar*.

Divine Magick.

It is distinguish'd into Lawful and Unlawful, and divided into Four Kinds. 1. *Divine*, by the particular Grace of Almighty God, which being absolutely happy and accomplish'd, exceeds our Forces, and wholly depends on that Spirit, *qui quo vult spirat*, and which discovers it self in noble and supernatural Operations, such as Prophecy, Miracles, &c. such Magicians were *Moses, Joshua*, the Prophets, Apostles, &c. This *Pliny* not understanding, condemn'd, as also another which he calls by the Name of the *Cyprian* Magick, that is, that of
St.

St. Paul; who being in *Cyprus* did, in presence of the Proconsul *Sergius*, make *Elymas* the Sorcerer lose his Sight.

2. Is the *Theurgick*, or *White Magick*, by the Assistance of an Angel, which upon account of Religion, enjoyns Fasting, Abstinencies, Piety, Purity, &c. that the Soul desirous of Commerce with the superior Deities, may not be in any thing diverted by its polluted or sinful Body.

Theurgick.

3. The *Geotick*, by the Assistance of a *Demon*.

Geotick.

4. *Natural Magick*, by their own Industry and Ability, which arrives to that degree, they will produce in *March* ripe Roses, Figs, &c. producing Effects before the Time ordain'd by Nature, and will cause Thunder, Lightning, Rains, Winds, Animals of divers Sorts, and several Transmutations and Transfigurations of living Beings, such as *Roger Bacon*, and others are said to have done by pure *Natural Magick*.

Natural Magick.

See the Treatise of Vegetables and Agriculture. V. 2. p. 13.

The Ceremonial Parts of *Magick* is Conjuring and Necromancy, whereby Men invoke the Souls of dead Bodies, and inchant Children, and carry about them certain Pocket *Demons*, little Spirits nourished in Glasses, by which they foretel and pretend to Prophecy, and spend their time in Incantations, Charms, Philters, &c. to the Prejudice of People. As we read that *Duffus*, King of Scots, was roasted with a gentle Heat, only by means of these Magicians laying an Image of Wax before the Fire; and the same they can do by Cold, tormenting the Absent with grievous Pains. See in *PHILOSOPHY*, pag. 13. and in *CHRONOLOGY*, p. 230. and in *AUGURY*, pag. 322. At the Coronation of King *Richard I.*

Ceremonial Parts of Magick.

The Rules of Necromancy aver a Soul may be raised up, if within a compleat Year, after its departure from the Body.

We read Women were forbid to be Spectators of the Olympick Games.

of England, Jews and Women were forbid to approach (by reason Inchantments were common) to prevent their Fascinations: As you may read in the *English* Chronicles.

Paracelsus tells us, that pronouncing the Words, *Osy, Osa,* will make Serpents stop their Motion and lie still as if they were dead. Note also, in pag. 22. in the Treatise of *VEGETABLES* and *AGRICULTURE*.

Whitchcraft.

Numa Pompilius, made use of Whitchcraft.

See *Augury*, p. 321. and 322.

The Art of imparting Secrets at a great Distance, which may seem like Conjurat[i]on. See in the Treatise of *Geometry*, p. 164. The Art of infusing the Courage of another Man into ones self. See *Vegetables* and *Agriculture*, p. 22. And for transfusing the Distemper of a Man into a Dog, or the like Creature. See in *Physick*. Of *reprints*, see in *philosophy*, p. 20.

Witchcraft, is a sort of Natural Magick, which is much the same as the former, whereby they will by giving Travellers or others a kind of enchanting Medicament in Cheese or the like, turn them into Cattel, making them carry what Burthens they think fit, e'er they restore them again to their former Shape. Such a thing happen'd as *St. Austin* affirms (when in *Italy*) to one Father *Prestantius*. So Witches can enchant standing Corn, call many Serpents together, and by the Power of Words stop Blood, and produce strange Effects. So we read one *Pasetes*, a Juggler, us'd to shew a great Banquet to an abundance of Guests sitting thereat; which, when he pleased, he caused to vanish again out of sight, leaving all the Guests both hungry and dry. The Divination, by the flying of Birds, is called,

Augury or *Auspicium*. See before the Treatise of *AUGURY*.

Chiromancy or *Palmestry*, is a Divination by Lines in the Hand. See hereafter.

Aruspicium, is a Divination by the Entrails of Beasts.

Pyromancy, is a Divination by Fire.

Eromancy, is a Divination by Air.

Geomancy, is a Divination by the Earth. See in *ARITHMETICK*, pag. 124.

Hydro-

Hydromancy, is a Divination by Water.

Necromancy, is a Divination by calling up of Spirits. See before : And in *CHRONOLOG Y*, Vol. I. p. 230. and in the Treatise of *DREAMS*, at the End.

Sorcery, is a Divination by casting of Lots.

Tripudium, is a Divination by Crums cast unto Chickens. See before in *AUGURY*, pag. 318.

Bellomancy, is a Divination by Arrows.

Sciomancy, is a Divination by Shadows.

Capnomancy, is a Divination by Smoak.

Coskinomancy, is a Divination by a Sieve.

Onirocritica, is a Divination by Dreams. See the Treatise of *DREAMS*.

The Practice we have to determine doubtful Matters, by the opening of a Book, and letting fall a Staff, are ancient Fragments of *Pagan* Divinations.

Andronicus Comnenius, a cruel Tyrant, and Emperor of *Constantinople*, being put into fear of Conspiracies, consulted with one *Sethus*, a Magician, who divined by a Bason of Water; and *Andronicus* desiring one day to know the Name of his Successor, *Sethus* shewed him in the Water the Two Letters, *J. S.* whereby he conjectured one *Isacius* (who had then rebell'd against him in the Isle of *Cyprus*) should be the Man. Nevertheless, there being another of that Name in the Court (a Man of so quiet a Spirit, *Andronicus* himself did not suspect him) his Counsellors advised him to put him in Prison; which being attempted by *Stephanus* and others, *Isacius* killed him, and took Sanctuary, where the People flocking, chose him Emperor, when he did not expect to save his Life.

When

Gaguin. Annal.
Iran. Lib. 6.

When *Ferrand*, Count of *Flanders*, assisted by the Emperor *Otho* the IVth, was to give Battle to *Philip* King of *France*; he was greatly encouraged by his Mother upon the Predictions of certain Magicians that the King of *France* should be overthrown and troden under the Horses Feet, and the Count be received by the *Parisians* with great Joy, which happen'd all accordingly; but in another manner, the Count being sent Prisoner to *Paris*.

Alexander, King of *Epyre*, having understood by an Oracle of *Jupiter*, that he should die near to the River *Acherusia*, and the City *Pandosia* (of which Names there was a City and River in *Epyrus*) thought to avoid the same by leaving his Country, and making War abroad in *Italy*, where he was slain near to a River and City so called. *Justin. Lib. 22.*

The Emperor *Valens*, having consulted with *Necromancers* concerning the Name of his Successor, and being told it should begin with *Theod.* he caused many of the Name of *Theodotus*, *Theodolus*, *Theodorus* and *Theodosius* to be made away, and amongst others the valiant Captain *Theodosius*, when he had recovered *Africk* from his Enemies, and gave Order to kill *Theodosius* his Son, whom God delivered from the Danger, and was afterwards Emperor. *Pau. Diac. Lib. 12.*

Mackbeth, King of *Scotland*, consulting a Sorcerers, was assured no Man born of a Woman should be able to kill him, whereby he practised great Cruelty to his People (having before aspired to the Crown by the Murder of *Duncan*, King of *Scotland*, a Wayward Sister having once told him he should be King of *Scotland*;) but in the end he was slain by *Macduff*, Earl of *Fife*,
who

who had been cut out of his Mother's Belly.
Hector Boetius, Lib. 12.

Nathalocus, King of Scotland, sent a great Favourite of his to enquire of a famous Witch, what should be the Success of a War then in hand, and other things concerning his Person and State? She answer'd, *Nathalocus* should be killed by the Messenger himself, who, tho' he departed from her with great Disdain and Revilings, protesting he would rather suffer 10000 Deaths; yet reflecting on the Matter in his return, and thinking the King might come to know of the Witches Answer, and hold him ever after suspected, he killed *Nathalocus*, *Hector Boet. Lib. 12.*

See more in *Astrology*, p. 298.

King *Hen. IV.* of England, in Anno 1413. was preparing for a Journey to *Jerusalem*; but being taken with an Apoplexy when at Prayers at *St. Edward's Shrine*, he was removed to the Abbot of *Westminster's* House, where recovering his Senses, and asking where he was, they answered him in the Abbot's House, in a Chamber called *Jerusalem*. Well, then said the King, *Lord have Mercy on me!* for this is the *Jerusalem*, where a Southsayer told me, I should dye; and so he did, being 20 March, 1413. See the *Chronicles*.

Edw. IV. King of England, being foretold, as is supposed, one, whose Name began with a G. should procure the Destruction of his Children after his Death, caused his Brother *George*, Duke of *Clarence*, to be murder'd in the *Tower*, not suspecting any thing of his Brother the Duke of *Gloucester*; who fulfill'd the Prophecy too fatally. *Pol. Lib. 24.*

King *Hen. V.* at the Birth of his Son *Henry* (after King *Hen. VI.*) in a Prophetick Rapture cry'd out, *Good God! I, Henry of Monmouth,*

mouth, shall for a small time Reign and much get ; and thou, Henry of Windsor, shall a long time Reign, and lose all.

King Hen. VII. of England, was descended from *Cadwallader*, the last King of the *Britains* ; to which *Cadwallader* it had been revealed 779 Years then past, that his Off-spring should Reign and bear Dominion in this Realm again.

Tradition of Magicians.

The People of *Rome* were not suffered to know the right Name of their City, least discovered to their Enemies their Patronal Gods might be called forth by Charms and Incantations. For the Tradition of Magicians is, That titular Spirits will not remove at common Appellations, but at the proper Names of Things to which they are Protectors.

Mathematical Magick.

For this skill Pope *Silvester* was accounted a Magician ; as you may see in the Ignorance of the Ancients.

Of *Mathematical Magick*, you may well inform your self if you read the Artificial Rarities of several rare Artists, mentioned before in the Treatise of *GEOMETRY*, beginning, p. 157. as also hereafter, in the latter Part of this Treatise, where you will find several wise Inquiries into hidden Things ; who, without the help of Natural Virtues and Efficacies, confidently undertook only by Mathematical Learning, and the help of Celestial Influences to produce many miraculous Works, as walking and speaking Bodies, which notwithstanding are not the real Animal. Some Curiosities and Paradoxes of which Art I will give the Reader towards the end of this Treatise from Bishop *Wilkin's* Works. But of another Nature were the speaking Fir Trees of *Dodona* ; the mention of which invites me to treat somewhat more

Of ORACLES.

The most famous Oracles of the Heathens were,

1. Of *Apollo* at *Delphos*, where an old Woman answered in *Greek* Verse, there was a glorious Temple or Fabrick enrich'd with innumerable Gifts; in the midst of this Temple, there was a very deep Vault made by an opening of the Earth, which Cavity was kept covered for the most part, but it was discovered when the Answer was to be given; and thereupon they set a *Tripes* or *Trevet* (a little Table supported with three Feet, called also *Cortina*, because it was covered with the Skin of the Serpent *Python*) upon which the Prophetess (named *Phæbus*, otherwise *Pythia*, or *Pythonissa*, and by the *Greeks* called *Engastro-myth*, signifying one that speaketh in the Belly) sat after some Ceremonies, and remained discovered; suddainly a sharp violent Wind horribly issuing from out the Cave seiz'd this Prophetess; which became furious and wholly changed, sometimes as if half Dead she pronounced her Answers, which were for the most part in *Greek* Verses, but ambiguous and very captious. This done, the wicked Spirit retired himself, and the Prophetess recovered her Spirits and became stayed and still. Here *Cræsus* consulting, received for Answer the doubtful Riddle of the Devil, in a Form of Words so cunningly contriv'd, that the Truth was then farthest of, when he thought to have gain'd it, viz.

Cræsus Halyn penetrans magnam pervertit opum vim.

So the Serpent told *Eve*, You shall be as God, knowing Good and Evil, i. e. They should have Knowledge of their Good lost, and Experience of their Evil found.

When

*When Cræsus over Halis roweth,
A mighty Nation he overthroweth.*

Which he interpreting according to his own hopes, crossed the River; but was vanquished himself by Cyrus, King of Persia, and his own Nation or Country ruined.

King Pyrrhus before his War with the Romans, having also recourse to this Oracle, received for Answer,

Aio te Æacide Romanos vincere posse.

Which doubtful Prediction he construed, *Te posse vincere Romanos*, Thou shalt overcome the Romans; but afterwards found the Devil meant, *Romanos posse vincere te*, That the Romans should overcome him, for so the Event proved.

Another Prince asking here also, what Success he should have in his Wars, was answered,

Ibis redibis nunquam per Bella peribis.

Which he distinguishing with Comma's thus, *Ibis, redibis, nunquam per, &c.* Thou shalt go, thou shalt return, thou shalt never Perish by War, ventured on the War, and was slain; whereupon his Attendants canvassing the Oracle, found that it was, *Ibis, redibis nunquam, per, &c.* Thou shalt go, thou shalt never return, thou shalt Perish by War.

This Temple of Apollo being spoiled by the Phocians, caused the Wars between them and the Thebans, called the Holy War; in which the Thebans being likely to have the worst, sent for Philip of Macedon, who made an end of the War

See the Ambiguous
Sentences in Chronology,
Vol. 1. p.
225.

War by subduing them both. The Spoil the *Phocians* got out of the Temple was 60 Tuns of Gold.

2. The second famous Oracle was of *Jupiter Ammon*, or *Hammon* in *Cyrene*, on the Confines of *Egypt*, in strange and hideous Defarts; and in the midst of a Wood, properly fitted with Fountains, stood the Temple where the Idol of *Jupiter* was, having the Head of a Buck, and covered with a Skin of the same. The Priests intending to know any Thing, set their Idol in a Boat, and shook it, singing some Song according to their own Jiggish manner. Then the Idol made Signs, and Nodded, which the Pontifex, or Chief Priest interpreted and related to the Person who came unto the Oracle.

Of *Jupiter Ammon*, &c.

Cambyfes and *Alexander* the Great, went to this Oracle to know of their Adventures; which last consulting this God, was ridiculously told he was a God himself. *Pliny* in his Second Book supposeth that this Name *Ammon* was given to the Oracle by reason of the sandy Defarts where the Temple stood. *Festus Pompeius* saith the same, *Lib. 8.* See more ample Discourses hereupon in *Giraldus*, in the second Commentary of his History of the Gods.

3. Another famous Oracle was the Temple of *Dodona*, (a City since called by the Name of *Epire*) where *Jupiter* answered, striking the Caldrons of Brass with a Silver Wand, which in the compass of certain Strokes, gave Answer in Articulate Sounds of Things to come, to silly Superstitious People, which resorted thither from all Parts. And near this Temple was a Forest of Speaking Firr-Trees, which immediately, as soon as any Man came to demand a Que-

Of *Dodone*.

a Question, moved themselves and uttered an Intelligible Answer; there were also in this Forest two Speaking Pidgeons.

of Preneste, Antium, &c.

There were other Oracles, as that of 4. *Preneste*, 5. *Antium*, 6. *Lebadia*, 7. *Mopsus*, 8. *Amphilocus*, 9. The Syrian Goddess at *Hieropolis*.

Oracles delivered in Dreams.

Satan used the like deceitful Juggling in the Oracle of Dreams at *Nabarca* in *Persia*, and other Supernatural Dreams sent from the Devil; for there were Gods that did appear to their Worshippers in Dreams, as *Morpheus* the God of Dreams, and *Amphioraus* in *Greece*, as also *Faunus* was adored amongst the *Latins* in *Italy*, who in a Vision by Night were wont to give Answers unto those that asked them; by reason whereof since that Time, the Places where such Oracles were delivered were called *Fauna*, and by change of Language, *Fanna*. Some hold this Word derived from *Faunus*, the first Inventor of this Superstition; *Festus* is of Opinion that it is derived à *fando*, that is to say, Speaking, because that in Dedication of Temples, the Chief Priest pronounced certain Words which served for that purpose. Some write *Phanam*, and derive it from the Greek word *Phaneron*, which signifieth that which is Manifest (*i. e.* publickly taken Notice of.) From thence the Fanaticks, and *Phanatiques*, Priests, have taken their Name, who in the Temple were seized with Diabolical Fury, and Transported beyond themselves in their Extasies and Raptures, shaking their Heads, and making strange Faces when the Evil Spirit came to possess them. Which was an Invention of the Devil to counterfeit the Holy Work of the Eternal God, in the Visions of his Prophets, and the excellent Gifts communicated to his Church in the Time of his Apo-

Apostles, as *Joel* had foretold in his Second Chapter, and *St. Paul* expounded in the Second of the *Acts*. This Practice was of late revived in the *French* Prophets, who made their Appearance in *London*, Anno 1710. And the word *Fanatick*, derived as before, hath been applied to the Sectaries of this Kingdom, especially since the Time of King *Charles I.*

As to those who confided in these Oracles of Dreams, they found the like Delusions with those before mentioned; for *Cæsar* dreaming that he committed Incest with his Mother, made himself Lord of *Rome*, which was his Country and Mother; and *Hippias*, the Son of *Pisistratus*, the Tyrant of *Athens*, having upon the like Projects the same Dream, was killed and buried in the Bowels of his Mother, the Earth, (as *Heylin* in his Geography, p. 399. observes.) So that had *Cæsar* miscarried in his Action, and *Hippias* thrived, yet still had the Devil been reputed his Crafts Master, and the Father of Truths. For particular and remarkable Dreams, with the Causes thereof, see in the Treatise of DREAMS.

Of Satanical Extasies, and the Principal Sorts of Divinations, see the *Theomancy* of *G. Peucer*, Lib. 4. See also *Plutarch de Orac.* &c. And,

The *Grecians* (as *Plutarch* saith) were most besotted on these Impostures of Satan, whose dark and fallacious Riddles are plentiful in most Historians and Poets before the Advent of Christ, at which time Oracles grew Mute, tho' they did not utterly cease, some continuing to the Reign of *Julian*, who consulting with the Devil, was told, that he could receive no Answer, because the Body of *Babylas* the Martyr was Entombed nigh his Temple.

For the better Discovery of some Ancient Crafts and Frauds of the Magicians, and their Miracles, we may Note, that

How Satan deludes us with false Miracles.

Transformation of Ulysses's Fellows and Diomedes.

There are Three ways by which Satan deludes Men with false Miracles; 1. By Local Motion, suddenly removing one Object from the Eye, and substituting instead thereof another. Thus we are deceived in many supposed Transformations, as when we think we see Women transformed into Cats; or Hares, or any other Creatures; the Woman is suddainly conveyed away, and the Cat put in her place; such were those Transmutations of *Ulysses's* Fellows into Beasts, and of *Diomedes's* Company into Birds. 2. By darkning the *Medium*, or Air, that we cannot see the Object, or by condensing it so, that the Object appeareth bigger than it is; or by altering of it so that the Object appeareth quite other than it is, or as we see strange Things thro' some Glasses. As *Pythagoras* once wrote (what he had a mind to) on a Glass with his Blood, which being held against the Full Moon, what he had written appeared to him that stood behind, as if it had been in the Body of the Moon. Or lastly, by working on, and disturbing of the Fancy, which is no hard matter for Satan to do, being a subtile Spirit of long Experience and Knowledge. 3. By working on the outward Sensitive Organ, either by altering the Situation thereof: Thus by Elevating or Depressing the Eye, we see Things double, and otherwise than they are, or by disturbing the Visive Spirits, or by casting a Mist before the Eye. By such Tricks the *Egyptian* Sorcerers made the People believe they had done the same Miracles that *Moses* did. And so the Witch of *Endor* deluded *Saul*, by presenting to

to him the resemblance of *Samuel*; whereas it was not in the Power of Satan, to disturb the Soul of any just Man, and to take it from that Place and Happiness where it is under the immediate Protection of the Almighty; yet many Learned Men are of Opinion, that *Samuel* did truly appear, God so permitting, that *Saul* might be convinc'd of his Wickedness and Desertion from God, by the same Prophet, whose Council he had heretofore despised. See more at the End of the Treatise of *DREAMS*.

Opinion about *Samuel's* Apparition.

Now, tho' Satan deludes oftentimes with false Miracles, yet it is not to be denied but that sometimes by God's Permission, he doth strange Wonders by the help of Natural Causes; as he can raise Storms, so he did against *Job's* Children; he can carry his Witches in the Air, so he did carry Christ to the Pinnacle of the Temple, and thence to an high Mountain; so the Angel carried *Habakkuk*. He can also make Beasts to speak by guiding their Tongues, so the Angel made *Balaam's* Ass to utter certain Words; but he can do no Miracle, that is, he cannot produce such Effects as exceed the Activity of Natural Causes; so he cannot raise the Dead, or give them Life again; he cannot restore Sight to the Blind when there is a total Privation; nor can he transform Men into Beasts, being the Body of a Beast is not capable of an Humane Soul; nor can the Soul of Man animate a Beast's Body, there being no relation between the Matter and Form; nor is there any Disposition, Appetite or Aptitude in that Matter to receive such a Form, especially infus'd therein. This is the only Work of God, who changed *Lot's* Wife into a Pillar of Salt, and *Nebuchadnezzar* into a Beast. Satan hath no Power over Celestial Bodies, tho' he be the

The Power of Satan.

Miracle, properly what it is, and what is not a Miracle.

Men may be changed in their Form like to Beasts, as appears before.

Prince of the Air; he cannot create nor do those things which God hath reserved for himself. Therefore when we hear of Men transform'd into Beasts, or raised from the Dead, and such like Miracles as exceed the Course and Activity of Nature, we may be assured these are not true Miracles, but satanical Delusions; especially if they be done to confirm Error, Wickedness, and Superstition; for the end of all true and divine Miracles, are to establish Truth and Holiness. Therefore, when we read of bringing down the Moon, of driving the Stars backwards, and such like Impossibilities believed among the *Gentiles*, we may conclude they were meer Delusions of Satan. Such were those Wonders ascribed to *Simon Magus*, of turning Stones into Bread, of being transform'd into a Sheep, Goat, and Serpent, of raising Souls from the Dead, and such like stuff; all these were meer juggling Tricks and satanical Deceptions.

Simon Magus
changing Stones
into Bread.

A Dog and a Serpent once spoke to King *Tarquin*, as *Sir G. Wharton* witnesseth in his Verses.

After the Death of *J. Caesar*, an Ox being brought out to Plough, cryed, Why urge you me to Work, we shall want no Corn but Men. See more at the End of this Treatise.

See in beginning
of Religion.

The Fear we have at seeing Satan's Stratagems, proceeds partly from the Guilt of our own Consciences; for *Adam's* Sin brought Fear on himself, and on his Posterity: Therefore, after he had fallen, he confesseth that as soon as he heard the Voice of God in the Garden, he was afraid; and so we, his Off-spring, do oftentimes Fear where we have no cause. Partly this Fear proceeds from want of Faith, which Christ reprov'd in his Apostles; who when they saw Jesus walking in the Night time on the Sea, they were afraid, thinking they had seen a Spirit

Spirit or Spectre. Besides the implacable hatred of Satan against Mankind, the delight he taketh in affrighting and hurting us either in our Persons or in our Estates, that irreconcilable Enmity which is between the Serpent and the Woman's Seed, is a great Cause of this Fear in us.

Lastly, We are naturally fearful in the Dark, because our Imagination worketh upon it self, having no outward Object to divert it. Hence Satan, who is the Prince of Darknes, useth the Opportunity of the Night to hurt or delude us; thus he affrighteth us in the Dark, in our Houses, with strange Apparitions, Motions and Sounds. So in the Night he affrighteth Travellers with *Ignis Fatuus*, or Jack in the Candle; which tho' it be a Natural Meteor (see in *METEORS* hereafter) yet Satan can make use of it and move it to and fro purposely to draw Travellers into Precipices and Waters. So in the Night time he affrighteth Mariners at Sea by insinuating himself into those fiery Meteors, which, like Candles or Balls of Fire, run up and down the Ship: These were deified by the old Pagans. If one single Flame appeared, they called it *Helena*; and held it an ominous Sign of Destruction, as she was to *Troy*. If there were Two, they named them *Castor* and *Pollux*, and placed their Statues in their Ships; as we read, *Acts* 28. And Seamen usually tell us of many strange Sights and Apparitions they have seen on the Ocean. Satan also useth to affright Men in Churches and Church-yards in the Dark, by representing to their Phantasy the Shape of Dead Men in their Winding Sheets. In the Night also strange Voices and Sounds are heard, near deep Waters or Rivers, which are taken as Presages of some unhappy Accident to happen there to some one; for so *Ross*,

Apparitions in Houses.

To Travellers.

To Mariners.

Helena a Meteor.

Castor and *Pollux*.

Pan dead.

in his *View of Religions* (from whence this present Discourse is taken) tells us, He once heard himself, and found the Event to fall out accordingly. It is strange what *Plutarch* writeth of the Voice which from the Shore called upon *Thamus*, the *Egyptian* Ship-master (who had then cast Anchor at *Praxea*) telling him, That the Great God *Pan* was dead. Tho' the *Night-Mare*, which is sometimes called *Incubus* and *Succubus*, be a Natural Disease as Physicians know, yet it is not doubted but *Satan* hath oftentimes made use of this Infirmary to abuse the Bodies of Men and Women in their Sleep.

He also deludeth us by Philters, Ligatures, Charms, ungrounded Amulets, Characters, and many superstitious ways in the Cure of common Diseases. For whether he worketh by Causes which have relation or none unto the Effect, he maketh it out by secret and undiscerned Ways of Nature. So when *Caius* the Blind, in the Reign of *Antonius*, was commanded to pass from the Right-side of the Altar unto the Left, to lay five Fingers of one Hand thereon, and five of the other upon his Eyes; altho' the Cure succeeded, there was not any thing in the Action which did produce it, nor any thing in his Power that could enable it thereunto. So for the same Infirmary, when *Aper* was counselled by him to make a Collyrium or Ocular Medicine with the Blood of a White Cock and Honey, and apply it to his Eyes for three Days. When *Julian*, for his Spitting of Blood, was cured by Honey, and Pine-Nuts taken from his Altar. When *Lucius*, for the Pain in his Side, applied thereto the Ashes from his Altar with Wine, altho' the Remedies were somewhat Rational, and not without a Natural Virtue unto such Intentions, yet

yet need we not believe, that by their proper Faculties, they produced these Effects; and surely of more than Natural Activity was his Counsel unto *Democritus*, when, for the Falling Sickness, he commended the Maggot in a Goats Head. Nor can it be naturally made out what is delivered of *Tobias*; that by the Fume of a Fish's Liver, he put to flight *Asmodeus* and *Vespasian*; by the Touch of his Foot restored a Lame Man; and by the Stroak of his Hand another that was Blind. See more of this in *Dr. Brown's Vulgar Errors*, p. 48, 49.

We read that *Sigebert I.* King of *Austrasia*, Son of *Lotharius VII.* defeated the *Lombards*, *Huns*, *Avari* and *Eruli*, who invaded him; but the *French* being affrighted by the Spectres raised by these Magical Barbarians, betook themselves to flight, whereupon he was obliged to a Peace. See more at the End of the Treatise of DREAMS.

In *Morocco*, in *Barbary*, is a stately Mosque with a very high Turret, on whose Top are four Apples of Gold, weighing together 700 Pounds Weight, so fixed by Magick they cannot be taken away, tho' attempted divers times by sundry Princes; who still desisted on some strange Accident befalling them. They are worth 200000 Ducats. See *Morden* 474. *Gorden* 318. *Heylin* 713.

AUTHORS who have wrote of Magick.

Zoroastes. Hermes. Evantes, King of the Arabians. Zachary, of Babylon. Joseph the Jew. Boccus. Almadel. Ptolemy. Alcmeon. Apollonius. Tryphon. Albertus. Arnoldus de Villa Nova. Raymund Lully. Bacon. Aponus, &c. Glanville on Witchcraft. G. Peucer.



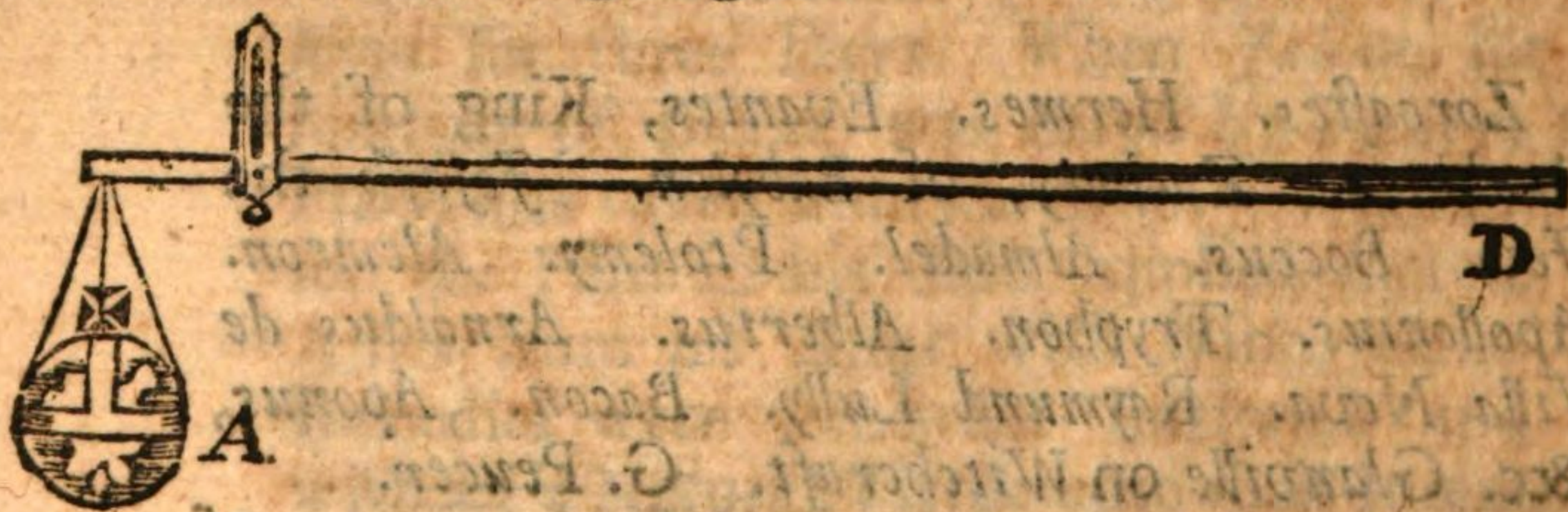
Of Mathematical Magick.

THE Term is of an ancient standing, one reason being in allusion to vulgar Opinion, which doth commonly attribute all strange Operations unto the Power of Magick. The Effects of which Art see before, p. 157, &c.

Ramus observes, That *Germany* hath been eminent for Mechanick Inventions, because of Publick Lectures of this kind instituted among them, not only in the Learned Languages, but also in the Vulgar Tongue; for the Capacity of every unlettered ingenious Artificer.

All the Magnificent Works of the Ancients, mention'd in *GEOMETRY*, *ARCHITECTURE*, and in the Treatise of *RARITIES*, &c. are hardly considerable in respect of Art if compared with the famous Speeches and Acts of *Archimedes*, who was wont to say, He could move, *datum pondus cum datâ potentia*, the greatest conceivable Weight with the least conceivable Power; and that, if he did but know where to stand and fasten his Instrument, he could move the World. Which Promise, tho' it was above the vulgar Apprehension or Belief, yet, because his Acts were somewhat answerable thereunto, therefore the King of *Syracuse* did enact a Law, whereby every Man was bound to believe whatever *Archimedes* would affirm.

'Tis easy to demonstrate the Geometrical Truth of those strange Assertions, by examining them according to Mechanick Faculties; which are too large a Subject to enter upon here, but may be conceived in some measure from the following Figure.



Where

Where suppose the Globe A, to contain 24000000000000000000 Pounds Weight (allowing 100 Pound for each Cubical Foot in it as *Stevinus* hath calculated); yet a Man at D, may be able to outweigh or move it.

So the Force that may be used by Multipli-
cation of several Wheels together, with Nuts
belonging unto them, may be easily experi-
mented in ordinary Jacks used for roasting
Meat, which commonly consist but of three
Wheels; yet can a Child pull up a good confi-
derable Weight thereby, and by the adding a
few more Wheels, a Man tied in the Place of
the Weight, might by a single Hair fastened to
the Fly or Balance of the Jack be drawn up
from the Ground, as is explain'd with a Fi-
gure in Bishop *Wilkin's* Discourse of *Mechanical*
Powers, p. 88. And the Force of this and the
like Faculties may be conceived by the Vulgar
in the Use of that Instrument called a Betty;
which Thieves and Robbers use for breaking or
wrenching open the strongest Doors, &c.

By this means might the strongest Oaks be pull'd up by the Roots and the like, as *Archimides*, with an Engine of Pulleys (to which he only applied his Left-hand) lifted up 5000 (some write 7000) Buffels of Corn at once, and drew a Ship with all its Lading upon dry Land. 'Tis said *Sampson* could carry the Gates of a City upon his Shoulders, and that the strongest Bonds were unto him but as Flax burnt with Fire; and yet his Hair being shaved off, all his Strength departed from him. *Milo* could carry an Oxe upon his Back (by having lifted it every day whilst it was a Calf and grew up) and yet, when he tryed to tear an Oak afunder, that was somewhat riven before, having drawn it to its utmost, it suddenly joined

joined together again catching his Hands in the Cleft, and so strongly manacled him, that he became a Prey to the Wild Beasts. But now by these Mechanical Contrivances, it were easy to have made one of *Sampson's* Hairs that was shaved off, to have been of more strength than all of them when they were on. For by the help of these Arts, it is possible for any Man to lift up the greatest Oak by the Roots with a Straw, to pull it up with a Hair, or even blow it up with his Breath, as the afore-said Author plainly demonstrates and shews by the Figure of an Engine in *p. 98.* And he saith, suppose the Roots of an Oak to extend 1000 Foot Square (which is almost a Quarter of a Mile) and 40 Foot deep, each Cubical Foot being 100 Pound Weight; which tho' it be much beyond the Extension of any Tree or the Weight of Earth, the Compass of the Roots in the Ground (according to common Opinion) not extending further than the Branches of the Tree in the Air, and the Depth of it not above 10 Foot beyond; which, the greatest Rain doth not penetrate, as saith *Seneca, Nat. Qu. L. 3. c. 7.* And because the Root must receive its Nourishment from the help of Showers, therefore it is probable that it doth not go below them. Now according to this Supposition (much exceeding the real Truth, perhaps) the Work of forcing up the Oak by the Roots, will be Equivalent to the lifting up of 40000000000 Pounds Weight; which, by the Advantage of such an Engine, he describes, may be easily perform'd with the least conceivable Power.

Of slowness in Motion.

As to Operations in this Art, which evidence strange slowness in Motion, see the Author afore-said. And 'tis related by our Country-man

try-man *J. Dee*, that he and *Cardan*, being together in their Travels, they did see an Instrument (which was at first sold for 20 Talents of Gold) wherein there was one Wheel which constantly moving round amongst the rest, did not finish one Revolution under the Space of 7000 Years. But our Author, *p. 113.* not only mentions but explains the slowness of a Motion which could not pass an Inch in a Million of Years; and that tho' there could not be one Minute of Time, wherein it did not rid some Space (saith our Author, but sure it may be rather termed some Inclination to Motion) and pass on further, yet this Body in many Years together should not move so far as a Hair's Breadth. So full is Art of rare and incredible Subtleties, yet since it is a Natural Principle that there can be no Penetration of Bodies, and since it is supposed that each of the Parts in the Engine, do touch one another in their Superficies, it necessarily follows that the Weight doth begin to move with the Power, however insensible it seems to us.

It may be conceivable by the foregoing Description of slowness of Motion, to find out Inventions for any kind of swiftness, and any kind of force thereby, as is experienced in the force of throwing a Stone with the Hand, and the casting it with a Sling, the end of which is further from the Shoulder Joint (which is the Center of Motion) than the Hand. *David's* Victory over *Goliath*, may sufficiently evidence the Force of these; and *Vegetius* (*Lipsius Polior. Lib. 4. Dialogue 2.*) relates it was usual this way to strike a Man dead, and beat the Soul out of his Body without so much as breaking his Armour or fetching Blood. We read of 700 *Benjamites* Left-handed that could sling

Of swiftness of Motion.

Judges 20. 16.

a Stone at a Hair's Breadth, and not miss. And a whole Nation of *Indians* were for their Excellency in this Art stiled *Baleares*. They were so strict in teaching this Art unto their young ones, that the Mother would not give any Meat to her Child till (being set at some distance) he could hit it with flinging. See *Archery*, in the Treatise of *GAMES*, Vol. I. p. 108. Swiftnes of Motion appeared very much in the Engines of War used by the Ancients, and especially those invented by *Archimedes*; the Actions of which famous Ingenier are largely set down by *Polybius*, in his History, Lib. 4. *Tzetzes Histor. Cbilias* 2. *Histor.* 35. *Proclus*, Lib. 2. c. 3. *Plutarch*, *Livy*, and divers others. As when the Roman Forces under the Conduct of *Marcellus*, had laid Siege unto the famous City of *Syracuse*, the Arts of this one Mathematician beat them back, and with one of his Engines he shot 500 Darts at a time; for which, and the Multitude of Stones and Arrows discharged against them, he was stiled *Briareus*. Yet, when the City was taken and sacked, he was killed by a common Soldier (not knowing who he was) as he was in his Study) notwithstanding *Marcellus*, had given a strict Charge to the contrary. Those defensive Engines made by the Romans, in the Form of Pent-Houses, for to cover the Assailants from the Weapons of the Besieged: Of which see in *MILITARY ART*, p. 220. he would presently batter in pieces. Those high Towers erected in some of the Ships, out of which the Romans might more conveniently fight with the Defendants on the Wall, these were also so broken by his Engines, that no Cannon or other Instrument of Gun-powder, saith Sir *Walter Rawleigh*, *Hist.* L. 5. c. 3. §. 16. had they been then in use, could have done greater

Josephus de Bello Judaico, Lib. 3. c. 9. Telleth of a Souldier standing by him on the Wall of *Jerapata*, who had his Head struck off by a Stone sent from one of these Engines, and his Brains were carry'd three Furlongs of.

greater Mischief.——— Of the Engines used by the Romans, and divided into two sorts stiled *Balista* and *Catapulta*, both which Names are sometimes used promiscuously; but according to their Propriety, *Balista* signifies an Engine for the shooting of Stones, and *Catapulta* for Darts or Arrows. See the *Æolii Sclope* in *GEOMETRY*, p. 163. See the *Battering Ram* in *MILITARY ART*, pag. 220. The Type of one of these *Ballista* and *Catapulta*, see in Bishop *Wilkin's Archimides*, or *Mechanical Powers*, p. 128. and 132. See the Example of an incredible Swiftnefs of Motion explain'd in his Figure, p. 143.

Of sailing Chariots.

The Force of Wind in the Motion of Sails may be applied to the driving of a Chariot by which a Man may Sail on the Land as well as by a Ship on the Water; and such Chariots are commonly used in the Champaign Plains of China. *Boterus de incremento Urbium*, Lib. I. c. 10. mentions that they have been tryed also in Spain, tho' with what Success he doth not specify. *Grotius* is very copious and elegant in the Celebrating of this Invention in divers Epigrams. And at *Schevelling* in Holland was a Chariot made by the Direction of *Stephanus*; which *Walchius* treats of in *Fabularum decas*, Fab. 9. And *Peireskius* travelled thither to Experience. Bishop *Wilkins* shews the Form of one, p. 158. and of its Swiftnefs in Motion. See in the Treatise of *GEOMETRY*, p. 157.

Mersenus doth, in his Tract *de Magnetis proprietatibus*, Comment or Descant upon making of a Ship for Submarine Navigations, wherein Men may safely swim under Water, which Bishop *Wilkins* saith is feasible, having been experimented here in England by *Cornelius Drebbel*; but how to improve it unto publick Use and Advantage, so as to be serviceable for remote

Of Ships for swimming under Water.

mote Voyages is the point. In which, one thing considerable, is the letting out or receiving in any thing as there shall be occasion without the Admission of Water, which might be done, saith this Author, by making certain Leather Bags of several Bignesses, which for the Matter of them should be both tractable for the Use and Managing of them, and strong to keep out the Water; for the Figure of them being long and open at both Ends, answerable to these, let there be divers Windows or open Places in the Frame of the Ship round the Sides, to which one End of these Bags might be fixed, the other End coming within the Ship, being to open and shut as a Purse. Now, if we suppose this Bag thus fastned to be tyed close about towards the Window, then any thing that is to be sent out, may be safely put into that End within the Ship, which being again, close shut, and the other End loosened, the thing may be safely sent out without the Admission of any Water. So again: When any thing is to be taken in, it must first be received into that Part of the Bag towards the Window, which being, after the thing is within it, close tied about, the other End may then be safely opened. It is easie to conceive how by this means any Thing or Person may be sent out or received in, as there shall be occasion; how the Water, which will perhaps by degrees Leak into several parts, may be emptied out again, with divers the like Advantages. Tho', saith he, if there should be any Leak at the Bottom of this Vessel, yet very little Water would get in, because no Air could get out. Other Difficulties will be the Motion or Fixing of it according to occasion; the directing of it to several Places, because, in this Case of Submarine

marine Navigation, they would want the usual Advantages of Winds and Tides for Motion, as well as the Sight of the Heavens for Direction. And these with many other Difficulties of Air and Fire, &c. our Author Answers with probable Remedies, as you may see in his *Dædalus*, or *Mechanical Motions*.

Before I conclude this Treatise, I am willing to add one Paradox more from the aforesaid ingenious Author concerning the Art of Flying in the Air; which hath been or may be attempted (to omit by Spirits or Angels as mentioned in Scripture) by the Help of Fowls, or by Wings fastned immediately to the Body: Or lastly, by a Flying Chariot. Of the First, They must be supposed to be great Fowl of a strong lasting Flight, and easily tameable, divers of which may be so brought up, as to joyn together in carrying the Weight of a Man, so as each shall partake his proportionable Share of the Burthen; and the Person that is carried may by certain Reins direct and steer them in their Courses, and more improbable Arts have been practis'd into brutish Creatures, as the Dancing of Dogs and Horses in our Time; of which latter was to be seen a Horse, which receiving several Pieces of Money (being blinded with a Cloath) from several Spectators, hath with a Scrape of his Foot denoted to each several Person his Piece again. Of the Second way by fastening Wings to the Body, which *Fredericus Hermanus*, in his Discourse *de Arte volandi*, doth only mention and insist upon. 'Tis related of a certain English Monk called *Elmerus*, about *Edward* the Confessor's Time, that did by such Wings fly from a Tower above a Furlong. And so another from *St. Mark's Steeple* in *Venice*. Another at

Of the Art of Flying in the Air.

Marcus Polus saith, The Rucks of Madagascar have Wings, whose Feathers are 12 Paces or 60 Foot long. Blackbirds, Nightingals, &c. do fly from us into Germany. And Mariners have found Fowl above 600 Miles from any Land.

Ernestus Burgavivus, in Panoplia Physico-Vulcania, Struimus in Lingua Resoluit.

No-

Noremburg. And *Busbequius* speaks of a *Turk* in *Constantinople*, who attempted something this way. *Burton*, in his *Melancholy*, *Par. 2. Sect. 1. Mem. 3.* mentioning this Quotation, doth believe that some new fangled Wit ('tis his Cynical Phrase) will sometime or other find out this Art. Tho' 'tis true most of these Artists did unfortunately miscarry by falling down and breaking their Arms or Legs, yet that may be imputed to their want of Experience and too much Fear, which must needs possess Men in such dangerous and strange Attempts. Those things that seem very difficult and fearful at the first, may grow very facile after frequent Tryal and Exercise. And therefore he that would effect any thing in this kind, should be brought up to the constant Practice of it from his Youth. Trying first only to use his Wings in running on the Ground as an Ostrich or Tame Goose will do touching the Earth with his Toes, and so by Degrees learn to rise higher till he shall attain unto Skill and Confidence. And one of our own Nation proceeded formerly so far in this Experiment, that he was able by the Help of Wings, in such a running Pace, to step constantly ten Yards at a time. Sure it is not more incredible, saith my Author, that frequent Practice and Custom should enable a Man for this than for many other things which we see confirmed by Experience. What strange Agility and Activeness do our common Tumblers and Dancers on the Rope attain to by continual Exercise! 'Tis related of certain *Indians*, that they are able when a Horse is running in his full Carreer to stand upright on his Back, to turn themselves round, to leap down, gathering up any thing from the Ground, and immediately to leap up again

again, to shoot exactly at a Mark, the Horse not intermitting his Course. These things may seem impossible to others; and it would be very dangerous for any one to attempt them who hath not first gradually attained to these Arts by long Practice and Tryal. And because the Arms extended are but weak and easily wearied, it is worth enquiry whither this might not be more probably effected by the Labour of the Feet, which are naturally more strong and indefatigable. In which Contrivance, the Wings should come down from the Shoulders, on each side, as in the other; but the Motion of them should be from the Legs, being thrust out and drawn in again one after another, so as each Leg should move both Wings, by which means a Man should (as it were) walk or climb up in the Air, and then the Hands and Arms might be at leisure to help and direct the Motion. As to the last Contrivance, by a Flying Chariot, I refer you to the Author's Treatise of *MECHANICAL MOTIONS*, where is a Resolution of the Two Chief Difficulties that seem to oppose the Possibility of a Flying Chariot, it being too tedious a Particular to recite here. And perhaps,

There are some who have invented Ways to walk upon the Water as regularly and firmly as upon the Land. There are some so accustomed to this Element, that it hath been almost as Natural to them, as to the Fish; and we read that some Men could remain for above an Hour together under Water.

Pontanus mentions one who could Swim above 100 Miles together from one Shore to another with great Speed, and at all Times of the Year. And it is storied of a certain young

A a

Man,

Treatise of Cu-
stom,

Man, a *Sicilian* by Birth, who had so continually used himself to the Water, that he could not enjoy his Health out of it. If at any time he staid with his Friends on the Land, he should be so tormented with a Pain in his Stomach, that he was forced for his Health to return back again to Sea, wherein he kept his usual Residence: And when he saw any Ships, his Custom was to Swim to them for Relief; which kind of Life he continued till he was an old Man and Dyed.

These things I mention (saith my Author) to shew the great Power of Practice and Custom, which might more probably succeed in this Experiment of Flying (if it were but regularly attempted) than in such strange Effects as these.

But enough of this: And for an Account of several rare Pieces of Workmanship in this Art which dares contend with Nature it self in seeming to infuse Life into Wood and Stone, &c. See the *Artificial Rarities* mentioned in the Treatise of *GEOMETRY*, p. 157.

of

Of CHIROMANCY:

OR,

PALMISTRY.

THIS Art *Pythagoras* made use of, making Conjectures upon Children, and such as he judged incapable of Learning he would not receive into his School, alluding perhaps to that of *Job*, *God imprinted or put* The Line of Life. See p. 209. *in the hands of Men, that so every one might know his Works.* That there is any Certainty in this Art, is utterly denied by many, who think it a Vanity to believe that the Seven Planets, predominate over the Seven Mountains, this Art placeth in the Palm of a Man's Hand, or that the Lines therein should have any Doctrine of Community with the length of Life, or that Riches, Accidents, or other Events, are to be judged off thereby. This Art however honoured with many Ancient, and some Honourable Professors (amongst whom *Cæsar* is said to be one) yet now is grown so unworthy as to be only practiced by Gypsies, and Vagabond People, the better Sort, thro' an understanding of its Vanity, and Profane Use, having wholly deserted it, and left it with its Errors, Evils, and Superstitions, to silly old Women and Beggars; wherefore I shall desist to say more thereof; but if any desire to be further acquainted with *Chiromancy*, he may find sufficient Tracts writ by these

A U T H O R S,

Hermes, Alchindus, Pythagoras, Pharaotes, the Indian Zophirus, Helenus, Ptolomeus, Galen, Avicen, Racis; of late, Albert the Teutonic, Michael Scotus, Antiochus Bartholomæus, Coclitis, Michael Savonarola, Antonius Cermisonus, Petrus de Arca, Andreas Corvus, Tricassus Mantuanus, Cardan de varietate rerum.

Of D R E A M S.

THE Doctrine of Dreams is called *Onirocritica*, and is supposed to be invented by one *Faunus*, as you may see in *MAGICK*, p. 336.

It is a Conjecturing Art that hath had many Followers amongst the greatest Philosophers, since the first Practicer thereof, whom *Philo*, in his Book of the Gyants, and of Civil Life, calleth by the Name of *Abraham*; nor doth the Names of *David* and *Solomon* escape being fixed to Treatises hereof. As to the causes of Dreams, External and Internal, the Dream-Mongers cannot agree; for the *Platonicks* reckon them among the Specifick and Concrete Notions of the Soul; *Avicen* makes the cause of Dreams to be an Ultimate Intelligence, moving the Moon in the middle of that Light, with which the Fancies of Men are Illuminate while they sleep; *Aristotle* refers the cause thereof to Common Sense, but placed in the Fancy; *Averroes* places the cause in the Imagination; *Democritus* ascribes it to little Images or Representatives separated

ted from the Things themselves; *Albertus* to the Superior Influences which continually flow from the Sky thro' many Specifick Mediums; but the Physicians impute the cause thereof to Vapours and Humours, and the Affections and Cares of Persons predominant when awake: For by reason of the abundance of Vapours, which immoderate Feeding exhalet, the Brain being therewith stuffed, formeth infinite Monsters, and strange Chimera's, whereof the greatest Eaters and Drinkers may well satisfy us. Some Dreams are governed partly by the Temperature of the Body, and partly by the Humour which aboundeth most in them, to which may be joyned the Apprehensions which have preceded the day before, as *Lucrece* saith in his Fourth Book,

*The greatest Warriors dream upon their Fight,
And Saylor's how to shun the Winds despight.*

And this is discovered in Hounds, and some other Creatures, who Bay and Bark in their sleep. As to Dreams Proceeding from the Humours and Temperature, or Distemper of the Body, we see they in whom

Cholerick Humour aboundeth, dream of Burnings, Combates, yellow Colours, and such like as they affect.

The Flegmatick see Waters, Baths, Sail upon the Sea, and dive into the Water, &c.

The Melancholy think they see thick Fumes, and Dream that they Toil in Obscurity thro' Desarts, where they meet with Fantasies and hideous Faces.

The Sanguine seem to be at merry Feasts, Dances, Dalliances, and see all Things shine about them.

See the Sect of
Anabaptists in the
Treatise of Reli-
gion, Vol. 1. p. 73.

They that have the hinder part of their Brain stopp'd with clammy Humours (called by the Physicians *Ephialtes Incubus*, or as we call it, the *Night-Mare*) imagin in dreaming that they are stifled. They that have the Orifice of their Stomach charged with Malignant Humours, are affrighted with strange Visions, by reason of those venomous Vapours that mount unto the Brain and distemper it. Of which see more in *Homer*, Lib. 19. of his *Odyssey*, and *Virgil* in the Sixth of his *Æneas*, *Macrobius*, Lib. 1. upon the Dream of *Scipio*, Chap. 3. *John Francis Picus*, Prince of *Mirandula*, Lib. 6. *de rerum prænotione*, Cap. 7. and above all, *Peucer*, Lib. 10. *De Divinationibus*, Cap. 7. See also in the beginning of the Treatise of *PHYSICK*.

The Devil did appear and give Oracles in Dreams to those that did consult him. *Hom.*
2d Iliad.

Of Diabolical and Significative Dreams, see the Authors last named, and *Malleus Malefactorum*; *J. Wier* in his Books of the Impostures of the Devil; *Bodin* in his *Demonomanie*, &c.

Macrobius mentions Five sorts of Dreams, viz. 1. A Vision, 2. A Discovery of something between Sleep and Waking, 3. A Suggestion cast into our Fancy, called by *Cicero*, *Visum*, 4. An ordinary Dream, and 5. A Divine Apparition, or Revelation in our Sleep. Such as were the Dreams of the Prophets, and of *Joseph*, as also of the Magi of the East. See in *ARITHMETICK*, p. 130.

Aristotle takes notice, that before a Child attains to 4 Years of Age, he is not capable of Dreams. And some write, that to sleep in a Sheep-Skin, the Person so doing shall dream true Dreams.

The *Romans* and *Egyptians* had a particular regard to Dreams, the Learned of whom did esteem the Soul in a profound Sleep, (being then more free from all sensual Impression) was better able to judge of Affairs, and to foresee the intricate Events of the Time to come.

The

The *Chaldeans* and *Persians* did judge some Dreams worthy of Observation, therefore they had Persons appointed amongst them, whose Employment was to discover the Design and Intention of Dreams. Amongst the *Romans*, the Interpretation of Dreams was the Office of the *Augures*. *Aristotle* observes, that such as seldom have any Dreams, have more reason to mind them. Tho' *Marcus Cicero*, in his Book of Divination, and many other Writers, give sufficient Reasons against the Vanity of those who give Credit to Dreams, yet besides those of *Joseph* and King *Pharaoh*, mentioned in Scripture, there are many others, whose Events make them worthy our Consideration.

At *Nabarca* in *Persia*, was the famous Oracle of Dreams.

Faunus in *Italy*, *Amphioraus* in *Greece*, *Morpheus*, &c. were Gods did appear to their Worshippers in Dreams. See in *Magick*, p. 336.

One said of Dreams, It is neither good to be Superstitious in all, nor yet an Epicure considerate of none.

Calphurnia, Wife to *Cæsar*, dreamed the Night before *Cæsar's* Death, that she saw him stab'd in the Capitol. *Artorius*, the Physician of *Augustus Cæsar*, dreamed before the Battle of *Philippi*, that his Master's Camp was Pillaged, which had no less Success than that of *Calphurnia*.

Vespasian the Emperor, dreamed a Person told him, his good Fortune would commence when *Nero* should have a Tooth drawn, which Event happened accordingly.

Simonides the Poet having interred a dead Corps he found on the Sea-shoar, the Night after dreamed the Person appeared to him, and advised him not to venture to Sea, which he did not; and his Associates proceeding on their Voyage, perished by a Tempest.

Mauritius the Emperor, who was slain by *Phocas*, dreamed a little before, that an Image of Christ, which was over the Brazen Gate of his Palace, called him and charged him with his Sins, and in the end demanded of him, whither he would receive the Punishment thereof

thereof in this Life or the next. And he answering, *In this*. The Image commanded he should be given, with his Wife and Children, into the Hands of *Phocas*. Whereupon *Mauritius* awaking in great Fear, asked *Philippus*, his Son-in-Law, whether he knew any Soldier in the Army called *Phocas*; he answered, there was a Commissary so called. And *Phocas* was his Successor, having killed him, with his Wife and Five Children. *Zonaras, Ann. Tom. 3. in Mauritio.*

Septimius Severus dreamed he saw *Pertinax* break his Neck by a Fall, and that the Horse came towards him, willing to be mounted. Which fell out truly, for *Severus* was chosen Emperor in his Place.

Amilcar, the *Carthaginian* General, besieging a Town in *Sicily*, dreamed he heard a Voice tell him he should Sup in the Town to Morrow; on which Attacking it, he was taken Prisoner, and did Sup there, tho' contrary to his Expectation of being a Prisoner therein.

David Pareus, an eminent Historian, born in *Silesia*, a little before his Death, at *Heidelberg*, Anno 1622. dreamed that the City and Castle was all in a Flame, and accordingly the Town was sacked by the *Spaniards* a little before his Death.

When *Arlet*, the Skinner's Daughter, was with Child, (of our *William the Conqueror*) she dreamed the Night before she was delivered, that a Light did spread from her Womb, that shone over all *England*.

Galen the Physician tells us, that having a Patient under Cure, whose Liver and Spleen were stop'd, he dreamed that if he should let him Blood in the Vein *Basilica*, he would be cured; which *Galen* accordingly venturing to do,

do, the Cure succeeded according to his Dream.

Odris was a famous Princess, the only Child and Heiress of *Homortes*, King of Part of *Bactria*. When she was sought in Marriage, she refused all that came to make their Addresses unto her, and was resolved to bestow her self upon a strange Prince whom she had seen in a Dream; and fancied so much, that she could not be quiet until she had dispatched away Messengers to him, to fetch him to her Father's Court.

Cesar dreaming he committed Incest with his Mother, was crowned Emperor of *Rome*; another dreaming the like, died shortly after, and was interred in his Mother-Earth, viz. *Hippias*, the Tyrant of *Athens*.

Caius Gracchus, Tribune of the Soldiers at *Rome*, dreamed that he heard his Brother *Tiberius* tell him, that he should die the same Death which he had done; which *Cicero* reports he told to many before he was created Tribune, and indeed happened accordingly. *Sleidan's Key of History*, in *English*, p. 83.

The Dream of *Maia*, the Mother of *Virgil*, (Prince of the *Latin* Poets) ought not to be passed over in Silence, who thought that she was delivered of a very fair Lawrel Branch; (the eminent Reward of Poets) and indeed *Virgil* merited that Crown above all other of the *Latins*. See in *POETRY*, p. 79.

Many of the Orders of a Monastick Life, are mentioned by Writers, to be occasioned by Divine Inspirations, or Warnings delivered to the Authors of them in Dreams, as the Order of *Trinitarians*, *Augustinians*, Order of Nuns of *St. Katharine*, &c. the Monks of the Order of *Camaldulenses*, the Monks of *St. Anthony*, &c.

There

There is no Medicinal Water, but only one in *Cornwall*, (a County in this Kingdom) of which Bishop *Hall* taketh occasion to speak in his *Mystery of Godliness*; where speaking of the good Offices of Angels to God's Servants, he saith, "Of this kind was that no less than
 "miraculous Cure, which at *St. Madern's* in
 "Cornwall, was wrought upon a poor Crip-
 "ple, whereof, besides the Attestation of se-
 "veral Hundreds of the Neighbours, I took a
 "strict and impartial Examination in my last
 "Visitation. This Man for Sixteen Years to-
 "gether, was fain to walk upon his Hands,
 "by reason the Sinews of his Legs were so
 "contracted; but upon Monitions in his
 "Dream to wash in that Well, he was sud-
 "dainly so restored to his Limbs, that I saw
 "him able both to walk, and get his own
 "Maintenance, I found there was neither Art
 "nor Collusion, the Thing done, the Invisi-
 "ble Author being God.

It is reported, that in King *Edward* the Sixth's Time, a Gentlewoman (Heiress to one *Tresculiard*) dreamed a handsome Man told her, that in such a Tenement of her Land, she should find Tin enough to enrich her self and her Posterity; who telling her Husband, upon Tryal, found a Tin-work there, which in four Years was worth to him almost 4000 Pounds.

The Custom of Painting a Pedlar with a Pack at his Back, and a Dog at his Heels, in the Windows of the Taverns and Publick Houses at *Sopham* in *Norfolk*, there being a Statue cut out in Stone, bearing the same Representation, in the Church belonging to that Town, has this Story for its Original; A certain Pedlar living in that Town, upon several
 times

times dreaming, that if he came to *London*, and stood on the Bridge of that City, he should hear joyful News; at last came up, and stood thereon three or four days, which being observed by a Shopkeeper, and asked the reason, returned for Answer the Dream he had; at which the Shopkeeper reproved him for his Superstition, telling him, that he himself had dream'd he was at *Sopham* in *Norfolk*, and that behind a Pedlar's House, under a great Oak lay concealed a mighty Treasure, yet (said he) I would not go down to an unknown Place, invited only by a Dream. The Pedlar well observing him, returned with all Speed, and digging in the Place behind his own House, found an infinite Sum, with Part whereof (the Church happening to fall down) he very sumptuously re-edify'd; in Memory whereof, his Statue is there at this very day. Of false Dreams see in *MAGICK*. Of a Dream that detected a Murtherer, see *Baker's Chronicle*, p. 153. in the Reign of King *James I.* See the Dream of one *Cuthbert Symphon*, in Queen *Mary's* Days, mentioned in *Fox's Book of Martyrs*.

Altho' Dreams are (as it is commonly said) to be understood by Contraries, yet for further Explanation, I take what the Wisdom of the Ancients Instruct in their

INTERPRETATION of DREAMS.

A.

Have Business delayed by an Adversary,
signifies Dispatch.

Commit Adultery, signifies Quarrels.

See Ants, signifies Strife.

Behold an Altar, shews Rejoycing.

Eat Apples, denotes Choler.

Have weak Arms, signifies Torment.

See an armed Man, signifies good Luck.

See an Ass, signifies Malice.

B.

Cut Bacon, signifies Death of some Person.

Eat Bacon or Salt Meats, signifies Mur-
murings.

Bath in a clear Fountain, signifies Foy.

Bath in stinking Water, shews Shame.

Eat Beans, signifies Sicknes.

Have a long Beard, shews Strength or
Gain.

Hear Beasts, signifies Gain.

Tame wild Beasts, signifies Damage.

See a Bed well furnished, signifies Foy.

Take Bees, signifies Profit.

See one Beheaded, signifies Sicknes.

Hear Bells ring, signifies Disgrace.

See Black-Birds, signifies Tribulation.

See Birds fighting, signifies Adversity.

See your deceased Brother, signifies long
Life.

Are shooting a Bow, signifies Honour.

See Candles burning, signifies Anger.

See Children born, signifies Damage.

See your self in black Cloaths, signifies
Foy.

Hear a Cock crow, is Prosperity.

See a Cross carried along, signifies Sad-
ness.

C.

Wear

- Wear a Crown, signifies Honour.
- Give any Thing to one Dead, signifies Loss. D.
- Fall in the Dirt, signifies Treachery.
- Hear Dogs bark, signifies overthrow of Enemies.
- See Dragons, signifies Gain.
- See an Eagle fly over your Heads, signifies Honour. E.
- See broken Eggs, is an ill Sign.
- Lose your Eyes, signifies Death of a Friend.
- Carry a Falcon on your Fist, signifies Honour. F.
- Wash your Feet, signifies Molestation.
- Cut your Fingers, signifies Damage.
- Gather Flowers, signifies Mirth.
- See Fire, signifies hasty News.
- See Flies, signifies Enemies.
- See Fountains, signifies Sadness.
- Walk in a Garden, signifies Joy. G.
- Gather Grapes, signifies Damage.
- Fall on the Ground, signifies Dishonour.
- See Persons Hanging, signifies Damage. H.
- Pluck the Hair of the Head, signifies Loss of Friends.
- Wash your Hands, signifies Disquiet.
- Hear Hens cackle, signifies Joy.
- Ascend to Heaven, signifies Advancement.
- See white Horses, signifies Joy.
- Build an House, signifies Comfort.
- Go a Hunting, signifies some Accusation.
- Are Incharmed, signifies Secrets and Sorrows. I.
- See your self hurt with Iron, signifies Damage.
- Kill a Man, signifies Assuredness of Business. K.
- See the King or Queen, signifies Honour.
- Ascend a Ladder, signifies Honour. L.

M.

See a Lamb or young Kid, signifies Comfort.

You Marry, signifies Danger, sometimes Death.

See the Moon pale, is Joyfulness.

See the Moon dy'd with Blood, signifies Travel.

O.

See two Moons, is increase of Sorrow.

See Old Folks, is bad.

P.

See Oxen ploughing, signifies Gain.

Write on Paper, signifies Accusation.

Are turned Physician, signifies Chearfulness.

R.

See your Picture drawn, signifies long Life.

Hear a Raven, signifies sadness.

See a River flow into your House, signifies Riches.

S.

See Ships sailing, is a good Sign.

See old Shooes, signifies Loss.

See the Sun in a Cloud, signifies Danger.

T.

Sell Trees, signifies Loss.

See Trees bearing Fruit, signifies Gain.

V.

Drink Vinegar, signifies Sicknes.

And this may suffice for a Touch upon the Interpretation of Dreams, which he that desires to read more of, may have recourse to the Authors named before, as also at the end of this Treatise. But before I conclude, I am willing to introduce some little Discourse of Apparitions.

Of Dreams and Apparitions.

Of the APPARITIONS of GHOSTS.

TH E R E is a great Similitude between the Internal World, or Incorporeal Beings ; and the Soul and Spirit of Man, by reason of which Affinity, it comes to pass that Souls departed or separated from their Bodies (which Divorce is called Death) do often communicate their Desires, and reveal various Secrets unto their Friends. For Dreams are Incorporeal, like the Soul or Spirit (and the Joy or Sorrow that is apprehended is as Essential to the Soul as any sensual Pleasure, Fear or Grief is to the Body ; and when the Body is dead, and the Soul separated from it, then all Incorporeal things become as Substantial as Material things do to the Body ; and the Seeing, Hearing, Tasting, Smelling and Feeling is as Real and Essential to the Spirit, as all sorts of gross Substances are to the outward Senses). And the Souls deceased have no other way to impart their Secrets that is so familiar as this, except some few who at their Death, are greatly affectionated to Wife and Children, or the like, and die in a very strong Desire of Revealing something that lies hid, or to manifest their Affections to their surviving Friends ; and these sometimes do it by assuming an Aerial Body, and appearing Affections being the chief General Cause of Apparitions of Souls departed. But then the Will and Desire must be very strong and powerful at the Departure of the Soul from the Body, or else it cannot cloath it self with a Sidereal or Elemental

mental thin Body; for the External Eye cannot see any thing but what is like it self, or compounded of the same Elements; and there is great difficulty for any Soul to cloath it self with a Material Body, neither indeed can it be done, if the Affections and Desires be not wonderful strong and powerful. Which shadow or thin Body continues no longer than the radical Moisture in the deceas'd Body does in some degree continue; for as the Moisture and Matter of the Body does waste and decay, so the Apparition or Ghost does grow weak, and at last vanish.

See the Tradition
in *Magick*, p. 327.

For the Soul cloathed it self by the Help of the Matter contained in the Body, which is done by a Sympathetical Operation between the External and Internal; for there is some Likeness or Relicks of the Spirit remaining in the deceased Body, so long as it continues moist and full of Matter; for if it were not so, it were impossible that any Soul should appear in any Body or Shape either Humane or Beastial.

Therefore it was that some of the Philosophical Ancients commanded the Bodies of the Dead to be burnt to Ashes; which did totally destroy the *Humor Radicalis*, or the Spirit of the External Elemental Nature, thereby preventing such Apparitions as we are speaking of, and hindring Souls from cloathing themselves with thin Aerial Bodies, which they can do only by a Sympathetical Agreement between themselves and their old Houses the deceased Bodies. For if the Soul departs from the Body filled with Affections to External things be they what they will, then finding it discomposed and disquieted, it longs after its old Body or House, and by Simile and Help
of

of the Fluid Humours and Spirits yet remaining in the Body, it attracts a subtle Matter, in which having vested it self, it becomes to outward view Corporeal. (See the Story related by *Phlegon*, and recited hereafter.) But if the Body should be consumed by Fire, then the Spirit or Soul would be prevented wholly of Matter for this Sidereal Cloathing, and therefore this way of burning the Dead Bodies was practis'd as in divers other Nations, so also in *England*, in former Ages; for then it was more frequent for departed Souls, as also for divers other sorts of Spirits to appear to the Living, than hath been of late Years. Some Reasons for which you shall have presently. Therefore they did consume their Dead Bodies with Fire, by which there was an immediate and full Separation between the Body and Soul, and no Simile remain'd, and consequently no Matter could be attracted or coagulated for the Formation of such Spectres or Apparitions.

But some write it is far easier and familiar for the Deceased Souls to communicate their Secrets to their Living Friends in Dreams, than to appear thus in External Forms by Cloathing themselves with thin Elemental Bodies; for Men in Dreams are nearer unto the Condition of departed Souls than when awake, and therefore they can with ease and great familiarity discourse and reveal their Minds unto them; more especially if there were a Simile between their Spirits, or if there was a hearty Love and Affection whilst they lived; and for this reason the Souls of Strangers do sometimes make Application to such sympathizing Souls of the Living, whilst the Body lies asleep and reveal great Secrets, or foretel them of things some-

times good, and sometimes evil that are likely to befall them. See about the Beginning of this Treatise of DREAMS.

Why Apparitions of Angels and Spectres are not common in these days.

But there is such a vast Disproportion between the Incorporeal Beings, viz. Souls departed, Spirits and Angels on the one side, and our outward Material Senses and Reason on the other, as makes all these wonderful Mysteries that happen to Man of this Nature, appear but as meer Fantasies, Shadows or Vanity; and therefore this secret Spiritual Converse of Souls are derided in the highest Degree, which Unbelief or Incredulity doth potently drive away, and cause a Separation of the Souls of the Deceased, as also of all good Spirits or Angels, which otherwise would be more prompt and ready to such Communications: For a strong Faith, firm Desires and Belief by the Mind or Soul being delighted in the Consideration of this Spiritual Discourse and Converse, does like a powerful *Magnet*, naturally attract and draw the Internal Powers, Souls and good Angels, and causeth them to delight to accompany Men both sleeping and waking; whilst vain Misbelief and despising Discourses drive them away, so that there seems to the outward Senses and Reason of most Men, that there is no such thing, but all are idle, vain Conceits; Mankind having by Vanity and Carnal Apprehensions depraved themselves, and put out the inward Eyes of his Intellectual, so that they are to him but as idle Imaginations. See *MAGICK*, pag. 327. and the Treatise of *METAPHYSICKS*, Vol. I. p. 29, 30, 31. The Records of sacred Truth do assure us, that most of the sober, enlightened Men in former Ages were sensible of this secret Converse of Angels and Souls, and

A pregnant Example of this we have in sound; for which see in *Musick*, p. 120, 121.

and had Myſteries revealed to them from God and his Miniſtring Spirits in Dreams and Viſions, as appears in the Holy Scriptures as *Genesis* 20. 3. God came to *Abimelech* in a Dream, &c. *Gen.* 31. 10, 11. The Angel of the Lord appear'd to *Jacob* in a Dream, &c. See *Genesis* 37. 9. and 40. 5. Of *Pharaoh's* Dream, ſee *Genesis* 14. 1. &c. *Numb.* 12. 6. ſaith, *If there be a Prophet among you, I the Lord, will make my ſelf known unto him in a Viſion, and will ſpeak to him in a Dream.* See *Sam.* 28. 15. Where *Saul* complains to the deceaſed Spirit or Soul of *Samuel* (of which ſee more in the Treatiſe of *MAGICK*, p. 339.) See alſo *Judges*, cap. 7. *1 Kings* 3. 5. *Job* 33. 14, 15, 16. and many other Places.

Of the ſeveral Apparitions of Angels, ſee in the Treatiſe of *METAPHYSICKS*, Vol. 1. pag. 29.

St. Paul would not have us believe an Angel from Heaven ſhould he admoniſh otherwiſe to us than the Church teacheth.

Trithemius's Obſervation is, That never any good Angel appeared in the Shape of a Woman. And *Van Helmont*, in his 93d Chapter, hath theſe Words: If an Angel appear bearded, let him be accounted an Evil one; for a good Angel hath never appeared with a Beard.

St. Auguſtine teſtifies, that he himſelf once ſaw a Corporeal Dæmon.

Hiſtorians write, the Spirit of *Cæſar* appear'd to *Brutus* in the Plains of *Philippi*.

Many Apparitions of Gobblings and the like, were ſeen at the Attempts made to cut the ſeveral Iſthmus's mention'd in the Treatiſe of *OECONOMY*, Vol. 1. p. 45, 46.

The *French* boaſt the Oyl with which they anoint their Kings at the Coronation, was

brought them by an Angel from Heaven. It is kept at *Rheims*, and said never to decrease.

The Family of *Oldenburg*, of which the present King of *Denmark* is descended, boast of a wonderful Horn given to their Ancestor *Otho*, Earl of *Oldenburg* (towards the End of the 10th Century) by a Spirit or Apparition; which Horn is to be seen at this day in the Castle of *Oldenburg* in *Denmark*.

But one of the most remarkable Apparitions I have met with, is that related by *Pblegon* (an Author cited by *Origen*, *Eusebius*, and *St. Hierom*, and flourished about 100 Years after the Nativity of our Saviour) and witnessed by the Testimony of a whole City, wherein he then governed. He saith, That at *Tralles*, a City in *Phrygia*, there was a young Maid named *Philenion*, Daughter of *Democrates* and *Chariton*, who loved Bravery, and by the Story was an amorous Piece; she fell sick of a Fever, and died (sighing after a young Gentleman, thence absent, and not daring fully to manifest her Passion). Her Parents greatly bewailed her, and buried her very honourably with all her Dresses, Cabinet, &c. Six Months after her Burial, the Gentleman she loved, named *Machates*, arriving at *Tralles*, lodg'd in her Father's House. The Spirit of the Maid (which was of the Condition of those whom *Plato* calls Body-Lovers) retaining, as it should seem, still the Affections with which she went out of her Body, appear'd one Evening to this *Machates*, with words of Affection, Embraces, &c. The young Man, at the first affrighted, became tractable by little and little, and soon made this Spectre very familiar. It happened one Night a Servant, sent by her Mistress to see what their Guest did, found

Phi-

Philenion, sitting by him, with the same Countenance and Cloaths she wore in her Life-time; whereat amaz'd, she run and told the Father and Mother their Daughter was alive. They reprehended the Servant as one distracted; but the Mistress went by Night into the Chamber yet perceiv'd nothing at all able to resolve her. Therefore, next Day, she threw her self at the Feet of *Machates*, and conjured him to tell her the Name of the young Maid who conversed with him. The Gentleman at length (being willing for brevity to omit several Circumstances of this Relation) said he was married to *Philenion*, and shewed her a Gold Ring her Daughter had given him, with a piece of Linnen she wore about her Neck, protesting she was his Wife; so much was he seduced by the subtil Practices of the Evil Spirit. The Mother kiss'd the Ring, embracing *Machates*, &c. (moving the whole Family to sorrow, which ran to see this Spectacle) and entreated as a Curtesie one Comfort he could not deny an afflicted Mother; which was once again to see her Daughter whom she accounted Dead. *Machates* promised to give her all satisfaction, and as *Philenion* came secretly according to Custom to converse with him, he closely sent his Lackey to the Mother who advertised her Husband of it, and both came to *Machates's* Chamber, where they surprized their Daughter, and cast themselves about her Neck, &c. but the Daughter, with a sad dejected Countenance, fetching a deep Sigh said, Alas! loving Father and Mother, your curiosity will cost you dear; for you will lament me the Second time. And thereupon fell down as dead, leaving a horrible stink in the Chamber, which filled the whole House with Terrour,
 B b 3 Groans,

Groans, &c. so that the Neighbours, and all the City ran thither to behold the Corps. The Magistrates wondring at an Accident so frightful, deputed some Citizens nearest of Kin to open the Tomb, where the Body of *Philenion* could not be found; but only a Cup and Ring she had received from this Gentleman. The Carrion was by Decree of the Senate thrown on the Dunghil and the City purged; and *Machates* being overwhelmed with Shame, flew himself. *Pblegon*, who was a Spectator of this Accident, wrote this History on purpose to send a Man immediately to the Emperor *Hadrian* to make a Recital thereof unto him, as he saith in a Letter directed to a Friend of his. And this Story is recited in *Causin's Holy Court*, Tom. 3. p. 162. where he speaketh of the Return of Souls.

Josephus, in his 17th Book of *Judaical Antiquities*, relateth the Apparition of the Spirit of *Alexander*, Son of the Great *Herod* and *Mariamne*, who was seen to his Wife *Glaphyra* when she remarried again to the King of *Mauritania*, to reproach her forgetfulness of her first Husband.

Philostatus, in the 8th Book of the Life of *Apollonius*, maketh mention of a young Man much troubled in Mind, concerning the State of Souls in the other Life, and saith *Apollonius* appeared unto him, assuring him the Soul was immortal.

Of several strange Apparitions and Visions made to Men in ancient Time. See in *Serenus Cressy's Church History of Brittany*. See also the wonderful Apparition and Discourse held with the Spirit of one *Sancius*; which is related by *Peter of Clugny*, and cited in *Causin's Holy Court*, Tom. 3. p. 175. where he treats of the Appa-

Apparition of Souls in Purgatory. See also the prodigious Narration of *Palladius*, and related by *Causin*, Tom. 3. p. 178. Of the Monk *Macharius*'s travelling through the hideous and savage Desarts of *Egypt*, in his way e're he was aware, set a Palmer's Staff which he had in his Hand upright upon the Head of a dead Man, which uttering a sad and frightful Voice. *Marcarinus* stood still and asked, Whose art thou? It answered, I am the Head of one damned, &c. See more of this in *Causin*.

Ross, in his *View of Religions*, p. 284. gives this strange Account of the Occasion of the Institution of the *Carthusians* or *Charter Friars*; the Author of which Order was one *Bruno*, Born in *Collen*, and Professor of Philosophy in *Paris*, about *Anno Christ. 1080*. For this *Bruno* being present at the singing of the Office for his Fellow Professor just dead (a Man highly reputed for his Holy Life), the dead Corps suddainly sitteth up in the Bier, and cryeth out, *I am in God's just Judgments condemned*. These Words it uttered Three several Days; at which *Bruno* was so affrighted, that a Man held so pious was damned, that he resolved to forsake the World. Hereupon, he with Six of his Scholars, betook themselves to a hideous Place for dark Woods, high Hills, Rocks, and wild Beasts, in the Province of *Dauphine* near *Grenoble*, the Place was called *Carthusia*, whence his Monks took their Name, and there built a Monastery, having obtained the Ground of *Hugo*, Bishop of *Grenoble*, who also became a Monk of that Order, which was confirmed by Pope *Alex. III. Anno 1178*. Some of this Order came into *England*, *Anno 1180*. and seated themselves at *Witham* near *Bath*. The strict Rules of the Order. See *Ross*, p. 285, 286.

Strange Visions in the Air as the Cross which appeared to *Constantine* before he turn'd Christian, and which was afterwards decypher'd and figur'd on the *Labarum* or Standard of the *Romans*, may be seen in *Causin's Holy Court*, in the *Soldier*; and many other Historians; as also many other Visions and Apparitions in the Air, may be seen in those Historians who write of the Wars of the *Christians*, *Turks*, *Pagans*, &c.

See before in the Treatise of *MAGICK*, where we speak of the Voice that told the Death of the God *Pan*, &c.

The Ancient *Necromancers* used to raise Illusions and Phantoms instead of true Spirits of the Dead. So *Apollonius* made *Achilles* to be seen appearing on his Tomb as a Gyant 12 Cubits high. So *Santabarenus* shewed to the Emperor *Basilus* the Soul of his Son *Constantine*. So *Jamblicus* made to appear in certain Baths of *Syria*, Two Figures of little Children like Cupids. See more at the End of the Treatise of *MAGICK*. All which to speak properly had nothing real in it, as you may see before, p. 339, &c.

These have wrote of *DREAMS*.

AUTHORS.

Artemidorus. *Daldianus*. *Maleus Malefactorum*. *Bodins Demonomanie*. *Peucer de Divinationibus*. *Vives de Anima*, &c.

Of HERALDRY.

NOBILITY was the Foundation of the Noble Art of *Heraldry*; and Philosophy hath been very much employed in designing and ordering the Arms of Noblemen. It is a Contemplation full of pleasing Variety, sympathizing with every noble and generous Disposition; and how should we give Nobility her true Value and Respect without notice of her Merit: And how may we know that Merit without outward Signs and Badges of Virtue, which anciently have been accounted Sacred and Precious.

As touching the Antiquity of Arms: God speaking to the *Moabites* said, *Every Man of the Children of Israel shall pitch under his own Standard, and under the Arms of their Fathers House.* Authors make mention of Arms, or Tokens (by which Appellation they went anciently) born 7 or 800 Years before the Siege of *Troy*, which is about 2900 Years since.

The *Romans* chose the Eagle; The *Phrygian* the Sow; The *Thracians* Mars; The ancient *Goths* the Bear; The People of the *Alani*, and the old *Egyptians*, a Cat; The *Saxons* the Lyon, as also the old *French* the Lyon and Salamander; but afterwards the *French* took the Toad, and the *Saxons* the Horse, and now the *French* have the Flowers *de Liz*, which they say was sent them by an Angel from Heaven to *Clovis* the first Christian King of *France*; The *Flemings* did bear the Bull; The Ensign of the King of *Antioch* was an Eagle holding a Dragon in his Claws; That of *Pompey* a Lyon with a Sword; That of *Attila* was a crowned Genet, &c.

The

Arms of the old
Romans, Phrygians,
Thracians, Goths,
Alani, Egyptians,
French, Saxons.

Flemings, King of
Antioch, Pompey,
Attila, Persians,
Jupiter, Neptune,
Mars, Bacchus,
Saturn.

The *Persians* bore a *Bow* and *Quiver*; *Jupiter* chose *Lightning* and *Thunder*; *Neptune* a *Trident*; *Mars* the *Javelin*; *Bacchus* the *Spear*, wrapped in *Boughs* of *Ivy*; *Saturn* the *Scythe*, &c. still chusing the most *Ravenous* and *Fierce* *Beasts* and *Birds*, as being of most *Signification* in *Honour*; and the *Heralds* still account that *Shield* most *Honourable* that has the most *Cruel* and *Fierce* *Creature* painted on it, and less *Esteem* of the rest. And at this *Day* the *Switzers* are noted by the *Bear*; The *Millainers* by the *Adder*; The *Imperialists* by the *Eagle*; The *House of Bourbon* by the *Cock*, &c.

Herald.

Herald, the *Teutonick* Word signifies an old *Man in Arms*, or a *Veteran Soldier*; and the *Dignity* of an *Herald* among the ancient *Romans* was very great; that same *Jus Feciale* or

Jus Feciale, by
by whom insti-
tuted.

Law of Arms, being first instituted by *Ancus Martius*, as *Levy* testifieth; tho' some ascribe

College of He-
rals ordained.
Office of an He-
rals.

it to *Numa Pompilius*, who ordained a *College of Herald*s. The *Office* of an *Herald* was to see that the *Romans* made not *War* unjustly with any of their *Confederates*, to determine of *War*, *Peace*, *Leagues*, *Agreements*, *Wrongs* taken or offered; nor was it lawful for either *Consul*, *Senate* or *People* to take up *Arms* against an *Enemy* without the *Consent* and *Approbation* of the *Heralds*. Among these *Heralds* there was one above the rest called

Pater Patratus.

First Herald who.

Pater Patratus. *Spurius Fufius* was the first *Herald* that ever was created among the *Romans*; and had that Name of *Pater Patratus* in the *War* which *Tullius Hostilius* made against the old *Latines*. Their *Office* now is to be *Judges* and *Examiners* of *Gentlemens Arms*, to proclaim *War*, and *Marshal* all the *Solemnities* at the *Coronation* of *Kings*, as also all *publick Feasts* and *Justs*, *Funerals*, *Marriages*, &c.

The

The three chief Herald's, are called *Kings at Arms*; and of them, 1. *Garter* is the Principal, instituted and created by *Henry V.* whose Office is to attend the Knights of the *Garter* at the Solemnities, and Marshal the Solemnities of the Funerals of all the greater Nobility, as of Princes, Dukes, &c. 2. *Clarenceux*, ordained by *Edward IV.* for he attaining the Dukedom of *Clarence*, by the Death of *George*, his Brother, whom he put to Death, for aspiring to the Crown, made the Herald, which properly belonged to the Duke of *Clarence*, a *King at Arms*, and called him *Clarentius*; his Office is to Marshal and Dispose the Funerals of all the lesser Nobility, as Knights and Esquires throughout the Realm, on the South side of *Trent*. 3. *North-Roy*, or *Norroy*, whose Office is the same on the North side of *Trent*.

Three Kings at Arms.
Garter.

Clarenceux.

North-Roy.
Nor. i. e. North,
Roy, i. e. King.

There are besides Six others, properly called Herald's, according to their Original, as they were created to attend Dukes, &c. in Martial Executions, viz. *York*, *Lancaster*, *Somerset*, *Richmond*, *Chester*, and *Windsor*.

Six Herald's.

Lastly, there be four others called *Marshals* or *Pursuants at Arms*, reckoned after a sort in the Number of Herald's, and do commonly succeed in the Place of the Herald's as they die, or be preferred; and these are named *Blue Mantle*, *Rouge Cross*, *Rouge Dragon*, and *Percullis*.

Four Pursuants.

The Office of the Earl Marshal of *England* is Hereditary, and consisteth especially in Matters of War and Arms; whereof you may read in Books of Heraldry and Law, and in *Lupanus* and *Tilius*, Lib. 2. Cap. De *Conestabili Mareschallo*.

Arms, what it
signifies.

ARMES is from the *Latin* word *Arma*, and signifies Shields, Targets, &c. on which were engraven or depicted the Marks or Ensigns of Martial Men, which are Tokens or Resemblances, signifying some Act, Virtue, or Quality in the Bearer, either by some worthy Exploit performed in Military Affairs, or by their Learning and Wisdom, or by Accidents, &c. See hereafter in the Coats of Arms of several *European* Princes, &c. And these Arms or Ensigns at the first had a chief Use for distinction of Tribe from Tribe, Army from Army, &c. being composed of one, two, or more Colours; whereof one was ever White or Yellow, which are termed Metals, besides which are seven more Colours, properly so called.

Their Use.

Escutcheon, how
derived.

ESCUTCHEON is derived from the *French*, *Un escu*, and that from the *Latin*, *Scutum*, which signifies Leather, because the Ancients had their Shields of tanned Leather. The form of the Ancient Shields were long and narrow, resembling a Door, the Targets and Buckler round: Among the *Europeans* there are but two forms now in use (beside the Lozenge given to Maids and Widows) which is the Oval, used in *Italy*, and the other the same we use, which is also used in *France*, *Germany*, &c.

Shields, Targets,
&c.

The Skill of Armory consists in *Blazoning* and *Marshalling*.

Blazoning, what.

BLAZON is from the *French* word *Emblasoner*; and by Blazoning is understood the displaying or expressing a Coat of Arms in its proper Metal and Colours, for to lay Metal upon Metal, or Colour upon Colour, is by the Heralds accounted a great Fault.

By

By Marhalling is understood the joyning Marshalling, what.
of divers Arms in one Shield.

Coats of Arms may be Blazoned by Planets, Three ways of
Blazoning.
by Precious Stones, and by Metals and Colours. But for the more ready knowing their several Terms, as also of all Balls or Roundles, (which are not distinguished by any Colour in Blazon, their Name denominating their Colour) take this following Table.

Metals and Colours.	Precious Stones.	Planets Names.	Roundles.
<i>Or.</i>	<i>Topaze.</i>	<i>Sol.</i>	<i>Beasants.</i>
<i>Argent.</i>	<i>Pearl.</i>	<i>Luna.</i>	<i>Plates.</i>
<i>Gules.</i>	<i>Ruby.</i>	<i>Mars.</i>	<i>Torteauxes.</i>
<i>Azure.</i>	<i>Saphire.</i>	<i>Jupiter.</i>	<i>Hurts.</i>
<i>Sable.</i>	<i>Diamond.</i>	<i>Saturn.</i>	<i>Pellets, or Ogreses.</i>
<i>Vert.</i>	<i>Emerauld.</i>	<i>Venus.</i>	<i>Pomes.</i>
<i>Purpure.</i>	<i>Amethyst.</i>	<i>Mercury.</i>	<i>Golpes.</i>
<i>Tenne.</i>	<i>Jacynth.</i>	<i>Dragon's Head.</i>	<i>Orenges.</i>
<i>Sanguine.</i>	<i>Sardonyx.</i>	<i>Dragon's Tail.</i>	<i>Guzes.</i>

In the Blazoning of any Coat, first begin with the Field, and then proceed to the Blazon of the Charge; and if there be fundry things charged in the Field, whether they be of one, or divers kinds, name that first which is most predominant, and lyeth next the Field, naming the Metal first when it may be, and using the fewest words you can, not repeating *Of, On, And, With,* above once in Blazoning any Coat; but if occasion be to expresse one Colour twice, you must say, *Of the First, Of the Second,* &c. according as the Metal or Colour had been first or second named. And for the better Rule in Blazon, observe,

Directions for
Blazoning.

1. Rule.

1. All common Charges or Bearings are born, *In, Upon, Within, or Between, Chief, Pale, Bend, Chevron, Cross, Saltier, Canton, Fess, Gyron, Pile, Escutcheon, Bordure, or Orle*, or one common Charge *In, Upon, or With* another, as shall be exemplified when I come to speak of the Honourable Ordinaries.

2. Rule.

2. If any Coat be doubly charged, and the last Charge extend it self over the Escutcheon or first Charge, it is to be said, *Over all*.

3. Rule.

3. If the Field consists of equal Number, it is to be called *Barry, Paly, Bendy, Chevrony* of Eight, Ten, or Twelve Parts, (if the Number be even) else it must be said of so many *Barrs, Pales, or Bends*.

4. Rule.

4. *Lyons, Griffins, Wolves, and Bears*, if exactly in *Pale*, are said to be *Rampant*; but if set more Bendways, *Lyons, Wolves, and Bears*, are *Saliant*; *Griffins*, *Segrant*. *Lyons* are also *Langued* (i. e. *Tongued*) and *Armed* of some different Colour often from that of the Body. *Griffins* are *Armed*; *Eagles* and *Swans*, *Membréd*; *Hawks* are *Fessed* and *Belled*; *Cocks* are *Armed*, *Crested*, and *Velloped*; *Capons* are *Armed*, *Crested*, and *Fowlopped*. All which things are to be expressed when the *Tongues, Bills, and Claws* are of different Colour from the Body.

5. Rule.

5. *Lyons* are most commonly born whole, and then they are either *Rampant, Rampant-Guardant, or Rampant-Regardant*; when they are set more Bendways, they are termed *Saliant*. Also they are born *Passant, Passant-Guardant, Passant-Regardant, Sejant, (or Sitting) Couchant, (or Lying) Dormant, (or Sleeping) Fessant, Issuant, and Naissant*; of which more hereafter in the Tenth Rule.

6. Creatures

6. Creatures partly born, as the Head, Leg, &c. are either *Erased*, (or torn off) or *Couped*, (cut off.) *Note*, The Paw of a *Lion* is called a *Gamb*.

6. Rule.

7. When *Lions*, *Eagles*, or other fierce Creatures are eating, term it *Ravening*, and tell whereon; but when they appear with *Flowers de Liz*, &c. in their Mouth, it may be said *Swallowing* or *Devouring*.

7. Rule.

8. All Fowls are born *Going*, *Sitting*, *Standing*, or *Volant*, that is, *Flying*. Their Beaks and Feet in *Cocks*, &c. are termed *Armed*, but *Eagles* Feet are called *Tallons*. *Eagles* are often born displayed with two Heads, and now and then closed, which is when their Wings are not spread.

8. Rule.

9. *Fishes* are either termed *Naïant*, or *Hauriant*. When three or four are born intermixing with each other, it is termed *Fretted*.

9. Rule.

10. *Lions*, or any Creatures that proceed from the bottom of any *Ordinary*, (of which I shall speak hereafter) it is termed *Issuant*; when over two Colours, *Fessant*; when from the Middle, *Naissant*, or *Swimming*, yet these are sometimes called *Demi-Lions*. And as there is Dividing and Abating of *Lions*, so is there sometimes *Lions* born with two Heads, and *Lions* Bincorporated and Trincorporated, but these Bearings are very rare. A *Lion*, or other Thing, said to be *Umbrated*, is when the Shape is only tricked out with a Pencil, and the Field appears thro' it. *Lions* are sometimes born *Barry*, *Vairy*, *Nebulee*, &c.

10. Rule.

11. *Stags* are Blazoned either *Tripping*, *Standing at Gaze*, *Lodged*, (when Resting on a Mount) *Springing forward*, and *Currant* (when Running.) *Bucks*, when their Horns are spoke of, are said to be *Attired*. All Creatures that
are

11. Rule.

are set one Passing contrary to the other, are said to be *Counterpassant*. If two stand Face to Face upright, they are termed *Combatant*, if Back to Back, *Endorsed*.

12. Rule.

12. *Beasts, Birds, Flowers*, or any other Thing, when but three in the *Field*, and not said to be in *Pale* or *Bend*, or in *Fess*, they always stand two above and one below; and when there is six, three, two, and one. If there be any *Ordinary* in the *Field*, where are three Things, it alters not their Position, but if there be six, they are commonly set otherwise.

13. Rule.

13. *Semi* is when *Crosses, Flower de Luces, Billets, &c.* are born throughout over the *Field*, the part of some of them appearing at the edges of the Shield.

14. Rule.

14. *Gutty* are Drops made thus , and are named according to their Colour, as *Gutty de Gules*, if Red; *Gutty de Larmes*, if Blue; *Gutty de Eau*, if White; *Gutty de Or*, if Yellow; *Gutty de Poix*, if Black.

15. Rule.

15. *Fretty*, is as it were so many *Staves* lying equally across and through one another over the *Field*; and being even in Number, is always called a *Fret* of so many Pieces.

16. Rule.

16. *Mullets* are drops of Water, or Liquid, supposed by falling, to be distended into five, or odd Points, and are only different from *Stars*, in that *Stars* are always born with even Points, as six, eight, twelve, or more Rays. But in *Guillim* I find *Stars* of six Points Blazoned by the Name of *Mullets*. They are born pierced and unpierced.

17. Rule.

17. *Lozenges* differ from the *Fusile*, because the *Fusile* is longer, and hath its upper end and lower parts more acute and sharp at the top and bottom, but all the Lines of an equal length.

length. A *Masle* is in the form of a *Lozenge*, but is always voided.

18. *Crescent* is the Moon, with her Horns up to the *Chief* of the *Escutcheon*, which form is mostly used. *Increscent* is her State of entering into her first Quarter, and has her Horns towards the *Dexter* part of the *Escutcheon*. *Decrescent* is her Wane, with the Horns to the *Sinister* part of the *Escutcheon*. *Detriment* is her *Eclipse*.

18. Rule.

19. *Beasts*, *Birds*, *Flowers*, &c. when of the Colour natural to them, in Blazoning, are termed *Proper*. *Note*, *Marilets* are *Birds* always painted without Legs, because they never use them, altho' they have them; and *Alerions* are *Birds* wanting Beaks, Legs, and Feet.

19. Rule.

20. *Bordures* charged with dead Things, are said *Entoile*, as of *Beasants*, *Coronets*, *Stars*, &c. and *Enaluron* when charged with *Birds*.

20. Rule.

Ermines are in Number Six; 1. *Ermine*, being White, powdered with Black, thus,  2. *Erminois*, Yellow, powdered with Black. 3. *Ermines*, Black, powdered with White. 4. *Pean*, Black, powdered with Yellow. 5. *Verry*, or *Vairy*, which is always *Argent* and *Azure*, thus,



unless it be said of two or three Colours. 6. *Vairy Copie*, the two Colours being expressed.

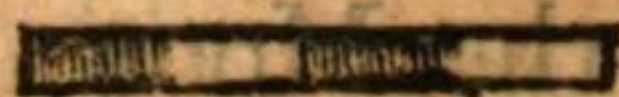
Compony is a *Checker* of but two in a Row, containing two Colours.



C c

Gobony

Gobony is but of one, as a *Bordure*, divided thus,



Checky is when there are three or more Panes in a *Bordure*, &c.

And now before I speak of the Honourable *Ordinaries*, I will distinguish the Points of an *Escutcheon*, that when those Points are occupied, it may be known how to assign each Point his apt and peculiar Name.



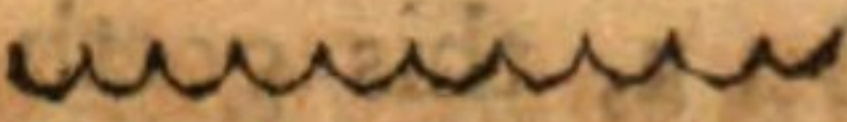
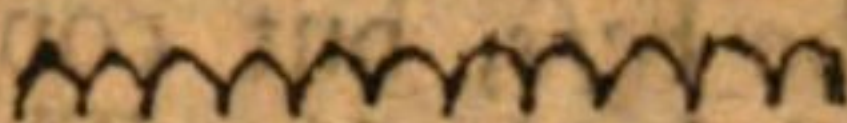
1. Signifieth the *Dexter Chief Point*. 2. The *Precise Middle Chief Point*. 3. The *Sinister Chief Point*. 4. The *Honour Point*. 5. The *Fess Part*. 6. The *Nombril Point*. 7. The *Dexter Base Point*. 8. The *Exact Middle Base Point*. 9. The *Sinister Base Point*.

Counterchanging of Colour and Metal, is when a Field is divided by a single Line, and the Charge exchanges Colour, as it goes over both.

A *Right Line* is carried equally throughout the *Escutcheon*, without rising or falling.

A *Crooked Line* is either *Bunched* or *Cornered*, according to these Examples.

Engrailed,

Engrailed,	
Invecked,	
Waived,	
Crenelle, or Embattled,	
Nebulee, or Cloudy,	
Indented,	
Dancettee,	



Of these and Straight Lines are composed the
HONOURABLE ORDINARIES,

Nine in Number, the Cross being added (and placed first) since the Passion of Christ, to the Eight that was before. They are,

Honourable Ordinaries.

1. The CROSS, of which are many sorts, as Plain, Patonce, Fitchy, Botony, Potent, Masculy, Patee, Furchy, Moline, Trunked, Raguled, Flory, Double Pitchy, Lozengee, Checky, Componee, Gobony, Corded, Nebulee, Waivy, Invecked, Indented, Ingrailed, Umbrated, Vairy, Voided, Portate, Flurt, Basepointed, Quarterly pierced, of Jerusalem, Cross Crosslets.
2. The CHIEF, which occupieth the upper part of the Escutcheon. The Chief is sometimes born Waivy, Indented, Quartered, Ingrailed, &c. This Ordinary is one of the most Honourable, and is often charged with something or other, and sometimes hath a Canton, which lieth over some part of the Chief. The Canton is less than the Quarter, and is often given as an Augmentation.
3. The FESS is the third Honourable Ordinary, and containeth a third part of the Field, and this is often charged, but the Bar never is.

The Cross.



The Chief.



The Fess.



The Bar.



4. The BAR, this goeth cross the *Escutcheon*, like the *Fess*, but containeth only the fifth part of the *Field*. There is never more than one *Fess* in a *Field*, but there is often more than one *Bar*. When the *Field* consists of equal Numbers, then it is to be called *Barry* of so many Pieces; when it consists of uneven Numbers, then it is said so many *Bars*. *Bars Gemews*, are *Bars* that stand by Couples.

The Pale.



5. The PALE goeth down from the chief part of the *Escutcheon* to the *Base*, and containeth the third part of the *Field*. The half of the *Pale* is the *Pallet*. The half of the *Pallet* the *Endorse*. *Bearings Party per Pale*, called *Baron* and *Feme*, are Married Coats.

The Chevron.



6. The CHEVRON is shaped like the Ridge, or Roof of a House. The half of the *Chevron* is the *Chevronel*. The half of the *Chevronel* is the *Couple close*, which is always born in Pairs, except there be a *Chevron* between.

The Bend.



7. The BEND goeth thwart the *Escutcheon*. The *Bendlet* is half of the *Bend*. The *Garter* is half of the *Bendlet*. The *Moiety* of the *Garter* is the *Cottise*, or *Cost*. The *Ribband* is half of the *Cost*. *Bends* are sometimes born *Sinister*, which come thwart from the left side of the *Shield* to the *Dexter Base*, and is divided into the *Scrape*, half of the *Sinister Bend*, and the *Barune* half of the *Scrape*.

The Saltier.



8. The SALTIER is shaped like St. Andrew's Cross, and is sometimes born *Ingrailed*, *Quarterly Quartered*.

An Escutcheon.



9. An *Inescutcheon* placed in the *Fess Point*, and called an *Escutcheon of Pretence*; and this is born by those that Marry an Heiress (with

(with her Arms thereon) on the midst of their own Coat, and having got an Heir, he may then *Quarter* her Coat with his; and by this means Persons of Quality come to bear many Coats.

The *Orle* something resembles the *Inescutcheon*, but is formed of a double Tract. Sometimes are born *Orles* of *Lyons Paws*, *Martlets*, &c.



The *Pile* consists also of a double Line, forming a kind of *Wedge*.



Augmentations are often given as a particular Mark of Honour, and are born either in an *Escutcheon*, or a *Canton*, as have all Barons of *England*, who bear the Arms of *Ulster* in *Ireland*, viz. *Ar. a Sinister Hand Gules*, set in the most commodious Place of their Arms.

The Distinction of Bastardy, is the *Batune*, or a *Bordure*.

The Distinction of a Traytor, is Reversing his Arms.

The Distinction of the Bishops Arms, are by two Keys, the ends whereof appear from behind their Coats.

The Distinction of Knights of the Garter, is by a blue Garter rounding their Arms, having thereon, *Honi Soit Qui Mal Y Pense*.

The Distinction of a Maiden-Lady, is by bearing her Arms in a Coat shaped Lozenge-wise.

The Distinction of a Widow, is by bearing her Arms Impaled with her deceased Husband's in a Lozenge.

The Distinction of Families, or Differences for Brethren, are



1. A *Label* of three Points for the Eldest Son.
2. A *Crescent* for the Second Son.
3. A *Mullet* for the Third Son.
4. A *Martlet* for the Fourth Son.
5. An *Annulet* for the Fifth Son.
6. A *Flower de Luce* for the Sixth.

And the Eldest Son of a Second House shall bear a *Label* upon a *Crescent*; the Second a *Crescent* upon a *Crescent* ; the Third a *Mullet* upon a *Crescent*, and so on. And the Eldest Son of a Third House shall bear a *Label* upon a *Mullet*; the Second a *Crescent* upon a *Mullet*, &c. But Daughters all bear their Father's Coat, without any differences.

Wreaths are always compounded of the Metal and Colour of the Coat of the Bearer, beginning with the Metal, and ending with the Colour.

Crests are set upon the *Wreath*, *Coronet*, &c. No Woman can bear a *Crest*, because a *Helmet* or *Mantle* are improper for her.

Mantles for Private Gentlemen are always *Gules* doubled *Argent*. For the Nobility, the Doubling is *Ermine*, and the King of England's *Mantle* is *Or*, doubled *Ermine*.

The *Helmet* of the King is open, and set full front, betokening Authority. Of Dukes, and the rest of the Nobility, is set a little more sideling, and of Private Gentlemen quite side-wise. Knights and Baronets bear another sort of *Helmet* full front and open, without *Bars*.

Supporters belong to none under the Degree of a Baron, Knights Bannerets only excepted.

Motto's

Motto's are common to many Families, and are often according to the Fancy, as well as Desert of the Bearer.

The Noble Ensigns of Royalty and Honour to Illustrate and Dignify the Head, are

1. The *Regnum*, or *Triple Crown* of the Pope.
2. The *Crown Mitral Imperial* for Emperors.
3. The *Mitre* for Archbishops and Bishops.
4. The *Cardinals Hat*, which must be Red.
5. The *Turbant*, worn only by the Grand Seignior.
6. The *Diadem*, usual to Kings.
7. The *Princes Coronet*, composed of *Crosses* and *Flower de Luces*.
8. The *Dukes Coronet*, all *Strawberry Leaves*.
9. The *Marquisses Coronet*, of *Strawberry Leaves* and *Pearls*.
10. The *Earls Coronet* of *Pearls* (which stand high) and *Strawberry Leaves*.
11. The *Viscounts Coronet*, set full of *Pearls*, close to the Ring.
12. The *Barons Coronet*, which hath but six *Pearls*, four of them in sight.
13. The *Chapeau*, or *Cap of Honour*, sometimes used by Dukes.
14. The *Cap of Maintenance*, such as the Lord Mayor's Sword-Bearer wears.

Sampson himself became Victorious at his own Grave in the Temple of the Philistines, *Sic sua inter Trophæa Moritur Sampson*. Erecting his own Monument within his own Grave, whence we have the Custom of hanging Flags over our Sepulchres.

And now for the better Satisfaction of all those who are curious, will I compleat this Synopsis, with setting forth the *Blazon* of the Royal Ensigns *Armorial* of the Queen of England, and the *Coats* belonging to the Episcopal Sees of the Lords Spiritual, with the *Paternal Coats* of all the Lords Temporal of this Kingdom, and then I shall proceed to Foreign Potentates, Emblazoning the Arms of

the Emperors, Kings, Chief Princes, and also the Common-wealths of *Europe*; likewise of several Emperors and Princes, who are known to bear any Arms in *Asia*, &c. desiring the Reader will be pleased to observe these Indexes  in his way, which are only placed where he may observe some Signification in the Thing born, and thereby attain to some Insight into the Arcana's of Heraldry.

The Arms of the Queen of Great-Britain.

The Arms of the Queen of *Great-Britain*, since the Union, are *Quarterly*; the first, *England*, viz. *Mars*, three Lyons *Passant Gardant* *Sol*, Impaled with *Sol*, a *Lyon Rampant*, within a double *Tressure Counterflowry*; *Mars* for *Scotland*; in the second *Quarter*, *Jupiter*, three *Flowers de Liz*, *Sol* for *France*; in the third *Quarter*, *Jupiter*, an *Irish Harp*, *Sol* stringed, *Luna* for *Ireland*; the fourth *Quarter* as the first; all within the *Garb*, adorned above with an *Imperial Crown*.



Note, Anciently the Arms of *France* were placed first in the *Quartering*, before *England*; for that *France* was the greater Kingdom, as well as that the Arms of *England* are but the *Lyon of Aquitain*, and the two *Lyons* of *Normandy*, (the Arms of a *Dukedom* in *France*) but the three *Flower de Luc*s were always the Arms of a Kingdom, and therefore also had the *Priority*.

Archbishop of Canterbury.

As to the Places of Precedency, the Bishops take Place between the Viscounts and Barons, and in respect of themselves the Bishops of London, Durham, and Winchester, take Place of all the rest who are to Precede according to the Seniority of their Consecration.

Canterbury. The Arms of this Archiepiscopal See, are *Saphyr*, an *Episcopal Staff* in *Pale Topaz*, and ensigned with a *Cross Patee Pearl*, surmounted of a *Pall* of the last, charged with four *Crosses*, *Formee*, *Fitch*ed, *Diamond*, *Edged*, and *Fringed*, as the Second.—*Sanctitatis radijs in orbe refulsit*. *Note*, The Coat of this See (as of all other of the Bishops) is Impaled with

with the Arms of that Family, of whom he is Descended that is Archbishop. Those Bishops under his Jurisdiction, are these that follow.

St. Asaph. Bears Sable Two Keys in Saltier, Or.

St. Asaph.

Bangor. Gules a Bend, Or, Gatty de Poix, inter Two Mulletts Argent.

Bangor.

Bath and Wells. Azure a Saltier Quarterly Quartered Argent.

Bath and Wells.

Bristol. Sable Three Ducal Coronets in Pale, Or.

Bristol.

Chichester. Azure a Presbyter John sitting on a Tombstone, in his Left Hand a Mound, his Right Hand extended Or, with a Linen Mitre on his Head, and in his Mouth a Sword, all Proper.

Chichester.

Coventry and Litchfield. Party per Pale, Gules and Argent, a Cross Potent and Quadrate in the Center, inter Four Crosses Patee of the Second and Or.

Coventry and
Litchfield.

St. David's. Sable on a Cross Or Five Cinquefoyls of the First.

St. Davids.

Ely. Gules Three Ducal Coronets, Or.

Ely.

Exeter. Gules a Sword in Pale, Blade and Hilt Proper, Two Keys in Saltier, Or.

Exeter.

Gloucester. Azure Two Keys in Saltier, Or.

Gloucester.

Hereford. Gules Three Leopards Heads Reversed, swallowing as many Flower de Lucas, Or.

Hereford.

Llandaff. Sable Two Crosiers in Saltier, Or and Argent, in a Chief Azure, Three Mitres, with their Labels, of the Second.

Llandaff.

Lincoln. Gules Two Lyons Passant Gardant Or, in a Chief Azure, our Lady sitting with her Babe, Crown, and Scepter, of the Second.

Lincoln.

London.

- London. Gules Two Swords in Saltier Argent the Pomels Or.
- Norwich. Azure Three Miters, with their Labels, Or.
- Oxford. Sable a Fess Argent in Chief Three Ladies Heads Arrayed and Veiled, Argent and Crowned Or, and in Base an Ox of the Second Passant over a Ford, Proper.
- Peterburgh. Gules Two Keys in Saltier, between Four Cross Crosslets Fitchy Or.
- Rocheſter. Argent on a Saltier Gules, an Escallop-shell Or.
- Salisbury, or Sarum. Azure our Lady with her Babe in her Right Arm, and a Scepter in the Left, all Or.
- Wincheſter. Gules Two Keys indorſed in Bend, the uppermoſt Argent, the other Or, a Sword interpoſed between them in Bend Sinister of the Second, Pomel and Hilt of the Third.
- Worceſter. in Latin, Wigornienſis. Argent Ten Torteauxes, Four, Three, Two, One.
- Archbiſhop of York. The Arms of this Archiepiſcopal See are Ruby, Two Keys in Saltier Pearl, in Chief a Crown Royal Topaz. *Altior quo Splendidior.* The Biſhops under him are
- Carlisle. Argent on a Cross Sable, a Mitre with Labels, Or.
- Cheſter. Gules Three Miters with their Labels, Or.
- Durham. Azure a Cross inter Four Lyons Rampant Or.

LORDS TEMPORAL.

DUKES.

Cambridge (George Augustus) Electoral Prince of Hanover.

Cambridge.

Norfolk (Thomas Howard) his Armes, Gules on a Bend between Six Croflets Fitchy Argent, an Escutcheon Or, thereon a Demi-Lyon in a double Tressure Counterflowry, Vulned with an Arrow through the Mouth, of the First.

Norfolk.

The Escutcheon was granted by K. Hen. VIII. to the Duke of Norfolk and his Heirs, for his signal Service against the Scots, at the Battle of Floddenfield.



Somerset (Charles Seymour) Quarterly 1st, Or on a Pile Gules, inter Six Flowers de Liz Azure Three Lyons of England. 2d, G. Two Wings Impaled Or, Third as the Second, Fourth as the First.

Somerset.

The First of these Coats was an Augmentation given to the Lady Jane Seymour, by King Hen. VIII. (whom he after espoused) and then this Family placed it for their Paternal Coat; whereas before they bore G. Two Wings conjoyned for their Paternal Coat.



Grafton (Charles Fitz Roy) the Arms of the King of England with a Batune Argent and Azure.

Grafton.

Ormond (James Butler) Or a Chief indented Azure.

Ormond.

Richmond (Charles Lenox) the King's Arms with a Bordure Gobonny Arg. and G. charged with Roses of the Second.

Richmond.

Southampton (Charles Fitz Roy) the Kings Arms with a Batune Sinister Ermine.

Southampton.

Beau-

Beaufort.

Beaufort (Henry Somerset) Quarterly France and England Arg. a Border Gobony of the First and Azure.

Northumberland.

Northumberland (George Fitz Roy) the King's Arms with a Batune Gobony Az. and Ermine.

Berwick.

Berwick (James Fitz James) the King's Arms, with a Bordure Gobony of England and France

St. Albans.

St. Albans (Charles Beauclaire) the King's Arms with a Batune G. charged with Three Roses Argent.

Schonberg.

Schonberg (Meinhard Schonberg) Arg. an Inescutcheon Sab. over all a Carbuncle of Eight Rays Or, with a Crescent difference.

Shrewsbury.

Shrewsbury (Charles Talbot) G. a Lyon Rampant within a Bordure Engrailed Or.

Bolton.

Bolton (Charles Pawlet) Sab. Three Swords in Pile Arg. Pomels Or.

Bedford.

Bedford (Wriothesley Russel) Arg. a Lyon Rampant G. on a Chief Sable Three Escallop-shells of the First.

Devonshire.

Devonshire (William Cavendish) Sab. Three Bucks Heads Cabosed Argent Attired Or.

Leeds.

Leeds (Thomas Osborne) Quarterly Ermine and Azure a Cross Or.

Marlborough.

Marlborough (John Churchill) Sab. a Lyon Rampant Arg. on a Canton of the Second a Plain Cross Gules.

Buckingham.

Buckingham and Normanby (John Sheffield) Arg. a Chevron between Three Garbs Gules.

Rutland.

Rutland (John Mannors) Or Two Bars Az. on a Chief Quarterly Two Flower de Liz, and a Lyon Argent.

Mountague.

Mountague (Ralph Mountague) Arg. Three Lozenges in Fess Gules within a Bordure Sable.

Dover.

Dover, Charles Douglas (Brother to James Duke of Queensborough in Scotland) Quarterly,
1st,

1st, *Argent* a *Man's Heart G. Crowned Or* on a *Chief Az.* *Three Mulletts* of the First. 2d, *Az.* a *Bend Or* *Cottized* between *Six Croflets Fitchy Arg.* 3d, *As* the Second. 4th, *As* the First. All within a *Bordure Or* charged with a *Tressure of Scotland*, with a *Crescent* difference.

Kent.

Kent (*Henry Grey*) *Barry* of *Six Arg.* and *Az.* in *Chief* *Three Torteauxes*.

Brandon (*James Douglass*, *Duke of Hamilton* in *Scotland*) *Quarterly*. 1st, *Gules* *Three Cinquefoiles Ermine* *Quartered* with *Argent*, an *Antique Ship Sab.* for *Hamilton*. 2d, *Argent* a *Heart G. Crowned Or*, on a *Chief Azure* *Three Mulletts* of the Field for *Douglass*, *Third* as the Second, *Fourth* as the First.

Brandon.

MARQUISSES.

Lindsey (*Robert Bertie*, *Lord Great Chamberlain* of *England* by *Inheritance*) *Arg.* *Three Battering Rams Barrewise* in *Pale Azure*, *Armed* and *Hooped Or*. (The Description of this *Battering Ram*, see in the Treatise of *MILITARY ART*.)

Lindsey.

Dorchester (*Evelyn Pierpoint*) *Arg.* a *Lyon Rampant Sable* inter *Eight Cinquefoiles Gules*.

Dorchester.

EARLS.

Darby (*James Stanley*) *Arg.* on a *Bend Az.* *Three Bucks Heads Cabosed Or*.

Darby.

Huntingdon (*Theoph. Hastings*) *Argent* a *Maunch Sable*.

Huntingdon.

Pembroke and Montgomery (*Thomas Herbert*) *Per Pale Az.* and *Gul.* *Three Lyons Rampant Argent*.

Pembroke.

Lincoln (*Henry Clinton*) *Arg.* *Six Croflets*, *Fitchy Sable* on a *Chief Azure* *Two Mulletts Or* *Pierced Gules*. Suffolk

Lincoln.

- Suffolk and Bindon. *Suffolk and Bindon (Henry Howard) Arms of the Duke of Norfolk, a Crescent difference.*
- Dorset. *Dorset and Middlesex (Lionel Cranfield Sackville) Quarterly Or and Gules a Bend Varie.*
- Salisbury. *Salisbury (James Cecill) Barry of Ten Pieces Argent and Azure on Six Escutcheons Sab. as many Lyons Rampant of the First, a Crescent difference.*
- Exeter. *Exeter (John Cevill) the same with Salisbury, omitting the Difference.*
- Bridgwater. *Bridgwater (Scroop Egerton) Argent a Lyon Rampant Gul. inter Three Pheons Sab.*
- Leicester. *Leicester (Robert Sidney) Or a Pheon Az.*
- Northampton. *Northampton (George Compton) Sab. a Lyon Passant Gard. Or between Three Helmets Arg.*
- Warwick. *Holland and Warwick (Edw. Hen. Rich) G. a Chevron inter Three Crosets Or.*
- Denbigh. *Denbigh (Basil Fielding) Arg. on a Fess Three Lozenges Or.*
- Bullingbroke. *Bullingbroke (Pawlet St. John) Arg. on a Chief G. Two Mulletts Or.*
- Westmorland. *Westmorland (Thomas Fane) Az. Three Left-hand Gauntlets Or.*
- Manchester. *Manchester (Charles Mountague) Arg. Three Lozenges in Fess Gules within a Bordure Sab. a Crescent for difference.*
- Berkshire. *Berkshire (Henry Bood Howard) same with the Duke of Norfolk, a Crescent upon a Crescent for difference.*
- Rivers. *Rivers (Richard Savage) Argent Six Lyons Ramp. Sable.*
- Peterburgh and Monmouth. *Peterburgh and Monmouth (Charles Mordant) Arg. a Chevron inter Three Estoiles Sable.*
- Stamford. *Stamford (Thomas Grey) same as Earl of Kent, a Label of Three Points Ermine.*
- Winchelsea. *Winchelsea (Charles Finch) Arg. a Chevron inter Three Griffins Passant Sab.*

Chester.

Chesterfield (Philip Stanhope) Quarterly Ermine and Gules.	Chesterfield.
Thanet (Thomas Tuston) Sab. an Eagle displayed Erm. within a Bordure Arg.	Thanet.
Sunderland (Charles Spencer) Quarterly Ar. and Gules, in 2d and 3d a Fret Or, on a Bend Sab. Three Escallop-shells of the First.	Sunderland.
Scarsdale (Nicholas Leake) Arg. on a Saltier Engrailed, Sable Nine Annulets Or.	Scarsdale.
Sandwich (Edward Mountague) the same as Manchester, a Mullet difference.	Sandwich.
Clarendon (Henry Hide) Az. a Chevron inter Three Lozenges Or.	Clarendon.
Essex (Algernoon Capel) Gul. a Lyon Ramp. inter Three Crozlets fitchy Or.	Essex.
Cardigan (George Brudenel) Arg. a Chevron Gules, inter Three Chapeaus Azure.	Cardigan.
Anglesey (John Annesly) Paly of Six Argent and Azure a Bend Gules.	Anglesey.
Carlisle (Charles Howard) the same as Duke of Norfolk, with a Mullet Sable.	Carlisle.
Ailesbury (Thomas Bruce) Or a Saltier and Chief G. on a Canton Arg. a Lyon Rampant Az.	Ailesbury.
Burlington (Richard Boyle) Per Bend Crenelle Arg. and Gules.	Burlington.
Shaftsbury (Anth. Ashley Cooper) Arg. Three Bulls Passant Sable.	Shaftsbury.
Lichfield (Edw. Henry Lee) Arg. a Fess, inter Three Crescents Sable.	Lichfield.
Sussex (— Leonard) Or, on a Fess Gules Three Flowers de Liz of the First.	Sussex.
Macclesfield (Fitton Gerrard) Arg. on a Saltier G. a Crescent difference.	Macclesfield.
Radnor (Charles Bodvile Roberts) Az. Three Estoiles Or, a Chief Waved Or.	Radnor.
Yarmouth (William Paston) Ar. Six Flowers de Liz Az. a Chief indented Or.	Yarmouth.

- Berkley. Berkley (Charles Berkley) G. a Chevron, inter 10 Crosses Patee Arg.
- Nottingham. Nottingham (Daniel Finch) the same as Winchelsea before, a Crescent difference.
- Rocheſter. Rocheſter (Henry Hide) the ſame as Clarendon before, with a Crescent.
- Abington. Abington (Mountague-Venables Bertie) the ſame as Lindſey, with an Annulet.
- Gainsborough. Gainsborough (Baptiſt Noel) Or a Fret of Eight Pieces G. a Canton Erm.
- Holderneſſe. Holderneſſe (Robert Darcie) Azure Three Cinquefoiles, inter Semi of Croſlets Arg.
- Plymouth. Plymouth (Other Windſor) G. a Saltier, inter Twelve Croſlets Or.
- Darwentwater. Darwentwater (James Radcliffe) Arg. a Bend Engrailed Sable.
- Stafford. Stafford (Henry Stafford Howard) the ſame as Duke of Norfolk, with a Crescent difference.
- Portland. Portland (Henry Bentinck) Azure a Croſs Moline Argent.
- Torrington. Torrington (Arthur Herbert) the ſame as Pembroke.
- Scarborough. Scarborough (Richard Lumley) Arg. a Feſs G. between Three Parrots Proper, Gorged with Collars of the Second.
- Warrington. Warrington (George Booth) Arg. Three Boars Heads Eraſed and Erected Sable.
- Bradford. Bradford (— Newport) Arg. a Chevron G. between Three Leopards Faces Sable.
- Rumney. Rumney (Henry Sidney) the ſame as Leiceſter, with a Crescent difference.
- Rochford. Rochford (— Zulleiſtein) 1ſt, Az. a Lyon, inter Semi of Billets, Or. 2d, Or a Lyon Rampant Gard. G. Crowned Azure. 3d, Arg. a Feſs Gules. 4th, Gules Two Lyons Paſſant Gard. Or over all an Eſcutcheon of Pretence, Gules Three Zules Arg. Two and One, the whole within a Bordure Ermine.

<i>Albemarle</i> (<i>Arnold just van Keppel</i>) G. Three Escallop-shells Arg.	<i>Albemarle.</i>
<i>Coventry</i> (<i>Thomas Coventry</i>) Sab. a Fess Ermine, inter Three Crescents Or.	<i>Coventry.</i>
<i>Orford</i> (<i>Edward Russel</i>) the same as Duke of Bedford, with a Crescent difference.	<i>Orford.</i>
<i>Jersey</i> (<i>Edward Villers</i>) Arg. on a Cross G. Five Escallops Or.	<i>Jersey.</i>
<i>Grantham</i> (<i>Henry D'averquerque</i>) the same as Rochford before, only the Escutcheon of Pretence is Arg. a Lyon Rampant Sable.	<i>Grantham.</i>
<i>Greenwich</i> (<i>John Campbell, Duke of Argyle</i>) Gyronny of Eight Or and Sable.	<i>Greenwich and Duke of Argyle.</i>
<i>Wharton</i> (<i>Thomas Wharton</i>) Sable a Maunch Arg. within a Bordure Or, an Orle of Lyons Paws in Saltier Gules.	<i>Wharton.</i>
<i>Pawlet</i> (<i>John Pawlet</i>) the same as the Duke of Bolton.	<i>Pawlet.</i>
<i>Godolphin</i> (<i>Sidney Godolphin</i>) G. an Eagle displayed with Two Heads between Three Flowers de Liz Arg.	<i>Godolphin.</i>
<i>Cholmondley</i> (<i>Hugh Cholmondley</i>) Gules Two Garbs in Chief Or; and Helmet in Base Point Argent.	<i>Cholmondley.</i>
<i>Mortimer and Oxford</i> (<i>Robert Harley</i>) Or a Bend Cotised Sable.	<i>Mortimer and Oxford.</i>
<i>Strafford</i> (<i>Thomas Wentworth</i>) Sable a Chevron, inter Three Leopards Heads Or.	<i>Strafford.</i>
<i>Dartmouth</i> (<i>William Legg</i>) Azure a Buck's Head Cabosed Argent.	<i>Dartmouth.</i>
<i>Ferrers</i> (<i>Robert Shirley</i>) Paley of Six Or and Azure a Canton Ermine.	<i>Ferrers.</i>

VISCOUNTS.

<i>Hereford</i> (<i>Price Devereux</i>) Arg. a Fess G. in Chief Three Torteauxes.	<i>Hereford.</i>
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- Mountacute. *Mountacute* (Henry Browne) Sable Three Lyons Passant in a Bend double Cottised Arg.
- Say and Sele. *Say and Sele* (Nath. Fienes) Azure Three Lyons Rampant Or.
- Townsend. *Townsend* (Charles Townsend) Azure a Chevron Ermine, inter Three Escallops Ar.
- Weymouth. *Weymouth* (Thomas Thynne) Ten Closets Or and Sable.
- Falconberg. *Falconberg* (Thomas Bellasise) Arg. a Chevron G. inter Three Flowers de Liz Az.
- Hatton. *Hatton* (William Hatton) Azure a Chevron inter Three Garbs Or.
- Longueville. *Longueville* (Talbot Felverton) Arg. Three Lyons Rampant, and a Chief Gules.
- Villers. *Villers* (Edward Villers) Arg. a Cross Gules charged with Five Escallops Or.
- Lonsdale. *Lonsdale* (Richard Lowther) Or Six Annulets Three Two and One Sable.

BARONS.

- Albergavenny. *Albergavenny* (George Nevill) G. a Saltier Arg. thereon a Rose of the Field.
- Audley. *Audley* (James Touchet) Ermine a Chevron Gules.
- Willoughby of Eresby. *Willoughby of Eresby* (Robert Bertie) the same as the Earl of Lindsey.
- De la War. *De la War* (John West) Arg. a Fess Dauncette Sable.
- Berkley. *Berkley* (James Berkley) the same as the Earl of Berkley.
- Morley and Monteagle. *Morley and Monteagle* (Thomas Parker) Arg. between Two Bars Sab. (charged with Three Beasants) a Lyon Passant G. in Chief Three Bucks Heads Cabosed of the Second.
- Fitz-Walter. *Fitz-Walter* (Charles Mildmay) Arg. Three Lyons Ramp. Azure.

Stourton (Edward Stourton) *Sab. a Bend Or into Six Fountains proper.* *Stourton.*

Willoughby of Brook (Richard Verney) *G. Three Crosses Recercele voided Or, a Chief Vaire Ermine and Ermines.* *Willoughby of Brook.*

Willoughby of Parham (Hugh Willoughby) *Or a Fret of Eight Pieces Az.* *Willoughby of Parham.*

Paget (William Paget) *Sab. a Cross Engrailed inter Four Eagles displayed Arg. charged with Five Lyons Rampant of the First.* *Paget.*

Howard of Effingham (Thomas Howard) the same as the Duke of Norfolk, with a *Crescent* difference. *Howard Effingh.*

North and Grey (William North) *Azure a Lyon Passant Or, between Three Flowers de Liz Argent.* *North and Grey.*

Chandos (James Bruges) *Argent a plain Cross Sab. thereon, a Leopard's Head Or.* *Chandos.*

Hunsdon (Will. Ferdinand Cary) *Argent on a Bend Sable Three Roses of the Field.* *Hunsdon.*

Petre (Robert Petre) *Gules a Bend Or, inter Two Escallop-shells Argent.* *Petre.*

Arundel of Wardour (Thomas Arundell) *Sable Six Swallows, Three, Two and One Arg.* *Arundel of Wardour.*

Tenham (Hen. Roper) *Party per Fez Azure, and Argent a Pale Counterchanged, Three Roebucks Heads Erased of the Second.* *Tenham.*

Brook (Foulk Grevill) *Sable on a Cross within a Bordure Engrailed Or, Five Gunstones.* *Brook.*

Gray of Wark (Ralph Gray) *Gules a Lyon Rampant within a Bordure Engrailed Arg.* *Gray of Wark.*

Lovelace (John Lovelace) *Gules on a Chief Indented Sable Three Martlets Or.* *Lovelace.*

Maynard (Banister Maynard) *Argent a Chevron Azure between Three Sinister Hands Gules.* *Maynard.*

Howard of Escrick (Charles Howard) the same as the Duke of Norfolk, with a *Flower de Luce.* *Howard of Escrick.*

- Mohun. *Mohun* (Charles Mohun) Or a Cross Engrailed Sable.
- Leigh. *Leigh* (— Leigh) Gules a Cross Engrailed in the first Quarter a Lozenge Or.
- Byron. *Byron* (William Byron) Arg. Three Bendlets inbanced Gules.
- Vaughan. *Vaughan* (John Vaughan) Or a Lyon Rampant Gules.
- Widdrington. *Widdrington* (William Widdrington) Quarterly Argent and Gules a Bendlet Sable.
- Dudley and Ward. *Dudley and Ward* (Edward Ward) Checky Or and Azure a Bendlet Ermine.
- Colpeper. *Colpeper* (John Colpeper) Argent a Bend Engrailed Gules.
- Rockingham. *Rockingham* (Lewis Watson) Argent on a Chevron Azure (Three Crescents Or) between Three Martlets Sable.
- Lexington. *Lexington* (Robert Sutton) Argent a Quarter Sable.
- Langdale. *Langdale* (Marmaduke Langdale) Sable a Chevron, inter Three Estoiles Arg.
- Berkley of Stratton. *Berkley of Stratton* (Will. Berkley) Gules a Chevron Ermine between 10 Crosses Patee Arg.
- Cornwallis. *Cornwallis* (Charles Cornwallis) Sable Guttee de Larmes on a Fess Arg. Three Cornish Choughs Proper.
- Crew. *Crew* (Nathaniel Crew, Bishop of Durham) Azure a Lyon Rampant Argent a Crescent difference.
- Arundell of Tre-rice. *Arundell of Tre-rice* (John Arundell) the same as *Arundell of Wardour*.
- Dormer. *Dormer* (Rowland Dormer) Azure Ten Bilets, Four, Three, Two and One Or, on a Chief of the Second a Lyon Issuant Sable, Armed and Langued Gules.
- Craven. *Craven* (William Craven) Argent a Fess, inter Six Croflets, Fitchy Gules.

Clifford of Chudleigh (Hugh Clifford) *Checky* Clifford of Chudleigh.
Or, and Az. a Fess Gules, a Crescent difference.

Osborn of Kiveton (Peregrine Osborn) *Quarterly* Ermine and Azure a Plain Cross Gules, a Label of Three Points difference. Osborn of Kiveton.

Carteret (John Carteret) Gules Four Lozenges in Fess Arg. Carteret.

Ousleston (Charles Bennet) Gules a Plate between Three Lyons Naissant Argent. Ousleston.

Stawell (William Stawell) Gules a Cross Masculy Argent. Stawell.

Guildford (Francis North) the same as North and Grey. Guildford.

Waldgrave (James Waldgrave) Per Pale Arg. and Gules. Waldgrave.

Ashburnham (— Ashburnham) Gules a Fess, inter Six Estoiles of Eight Points Arg. Ashburnham.

Lempster (William Farmer) Argent a Fess Sable between Three Lyons Heads Erased Gules. Lempster.

Weston (Charles Butler) the same as the Duke of Ormond his Brother, with a Crescent. Weston.

Herbert of Chirbury (— Herbert) the same as the Earl of Pembroke. Herbert of Chirbury.

Haversham (John Thompson) Or on a Fess, indented Azure Three Estoiles, Arg. a Canton of the Second, charged with a Sun in his Glory. Haversham.

Sommers (John Sommers) Vert a Fess Dancette Ermine. Sommers.

Barnard (Christopher Vane) the same as the Earl of Westmorland, with a Crescent. Barnard.

Halifax (Charles Mountague) the same as the Earl of Manchester. Halifax.

Guernsey (Heneage Finch) the same as the Earl of Winchelsea, with a Crescent on a Crescent. Guernsey.

Conway (Francis Seymour Conway) Gules a Pair of Wings conjoyn'd and display'd Or, the Tips downwards. Conway.

Granville.

Granville (John Granville) Gules 3 Sufflurs, or Organ Rests Or, with a Crescent.

Gower.

Gower (John Levison Gower) Barry of Ten Argent and Gules, a Cross Patonce Sable, Quartering Azure 3 Laurel Leaves Or, 2 and 1.

Harvey of Ickworth.

Harvey of Ickworth (John Harvey) Gules on a Bend Argent Three Trefoiles slipped Vert.

Cowper.

Cowper (William Cowper) Arg. Three Martlets Gules on a Chief Engrailed of the Second, Three Annulets Or.

Pelham.

Pelham (Thomas Pelham) Azure Three Pelicans Arg. Vulnerating their Breast Proper.

Harcourt.

Harcourt (Sim. Harcourt) Bears G. 2 Bars Or.

Boyle.

Boyle (Charles Boyle) Per Bend Crenelle Gules and Argent, a Crescent difference.

The Names, Families and Honours of the Scotch, French and Irish Nobility, with their Coats of Arms (all in their proper Colours) I have by me in a Manuscript; but I do not think fit to insert any thing thereof here, but will proceed to the

ARMS or BEARINGS of Foreign Potentates.

The Armorial
Ensign of the
Emperor of Ger-
many.

The Arms of the Emperor of *Germany* are, Quarterly, 1. Barrewise Argent, and Gules of 8 Pieces for *Hungary*. 2. Arg. a Lyon G. the Tail Nowed and Passed in Saltier, Crowned Langued and Armed Or, for *Bohemia*. 3. G. a Fefs Argent for *Austria*. Party and Bendwise Arg. and Azure a Border G. for ancient *Burgundy*. 4. Quarterly, in the First and Fourth Gules a Castle Triple tower'd Or, Purfl'd Sab. for *Castile*. In the Second and Third Argent a Lyon Purple for *Leon*. This Shield environed with a Collar of the Order of the Golden Fleece is placed on the Breast of an Eagle display'd Sable in a Field Or, Diadem'd, Membred and Beak'd Gules, holding a naked Sword in the Right

Right Talon, and a Scepter in the Left (the 2 Heads signify the *Eastern* and *Western* Empires). The Shield is Crested with an Imperial Crown closed and raised in the Shape of a Miter, having betwixt the 2 Points a Diadem surmounted with a Globe and Cross Or. The Diadem represents the Empire, and the 2 Points *Denmark* and *Bohemia*; for the Motto are these Words, *Uno avulso non deficit alter*. The Emperors peculiar Devise is, *Pax & Salus Europa*.

The Arms of the Emperor of *Russia* is, Or, an Eagle displayed with 2 Heads Sable, bearing on its Breast a Shield; the Field being Gules charged with St. *George* killing a Dragon Argent betwixt the Heads of the Eagle are 3 Crowns placed one above another, which are said to signify *Muscovy*, and the Two Kingdoms of *Cassan* and *Astracan*. They say it was the Tyrant *Iwan-Basilewich*, who first made use of these Arms, to raise a belief he was descended from the ancient *Roman* Emperors; the word *Czar* signifying *Cæsar*. Others make the Arms of *Muscovy* to be Sable a Portal open of two Leaves, and as many Degrees Or.

The Armorial Ensign of the Emperor of *Russia*.

The Arms of the Emperor of *Turkey* is, Vert a Crescent Argent, Crested with a Turbant, charged with 3 Black Plumes of Herons Quills, with this Motto, *Donec totum Impleat Orbem*.

The Armorial Ensign of the Grand Seignior.

The Arms of the King of *France* are, Azure 3 Flowers de Liz Or, and the Arms of *Navarre*, which he also bears. The Shield environed with the Collars of the Order of St. *Michael*, and the Holy Ghost. For Crest a Helmet entirely open, thereon a Crown with 8 Inarched Rayes, topt with a double Flower de Luce. The Supporters, 2 Angels habited as *Levites*;

The Arms of the King of *France*.

the whole under a Pavilion Royal Semi of France, Lined Ermines with these Words: *Ex omnibus Floribus elegi mihi Lilium. Lilia neque laborant neque nent.*

The Arms of the
King of Spain.

The Arms of the King of Spain Quarterly. The First Quarter Counterquartered, in the First and Fourth Gules a Castle tripple towered Or bordered Azure, purfled Sable for *Castile*. In the Second and Third, Argent a Lyon Passant Gules Crowned Langued and Armed Or, for *Leon*. In the Second Great Quarter, Or 4 Pallets Gules for *Arragon*; Party Or 4 Pallets also Gules betwixt 2 Flaunches Argent, charged with as many Eagles Sable Membred, Beak'd and Crowned Azure for *Sicily*. These 2 Great Quarters grafted in Base Argent a Pomegrate Vert Stalk'd and Leaved of the same opened and seeded Gules for *Granada*. On the whole the Arms of the King of *Portugal* (as below). In the Third Great Quarter Gules a Fefs Argent for *Austria*; Coupe and Supported by Ancient *Burgundy*, which is Bendy of 6 Pieces Or and Azure border'd Gules. In the Fourth Quarter Azure Semi of Flowers de Liz, Or, with a Bordure Compone Argent and Gules for Modern *Burgundy*; Coupe Or supported Sable a Lyon Or for *Brabant*. These Two Great Quarters charged with an Escutcheon Or, a Lyon Sable. Armed and Langued Gules for *Flanders*; Party Or an Eagle Sable for *Anvers* or *Antwerp*. For Crest a Crown Trefoiled Or, raised with 8 Diadems terminating in a Mound Or. The Shield encompassed with a Collar of the Order of the Golden Fleece, and on the Sides stands 2 Pillars of *Hercules*, viz. on each Side one, with this Motto, *Plus ultra*.

The

The Arms of the King of *Portugal* are, Argent 5 Escutcheons Azure, each charged with as many Beasants placed in Saltier for *Portugal*, The Shield border'd Gules charged with 7 Towers Or for *Algarve*. The Crest a Crown Or, Under the 2 Flaunches, and the Base of the Shield appear the Ends of 2 Crosses; the one Pattee Gules for the Order of Christ, the other Flower de Luced Vert for the Order of *Avis*. The Motto changeable; but frequently is, *Pro Rege & Grege*.

The 5 Escutcheons were born in Memory of 5 Kings, whom *Alphonso I.* slew at the Battle of *Obrique*, Anno 1139. The Border and Towers were added by *Alphonso III.* on his Investiture into the Kingdom of *Algarve* by *Alphonso X.* of *Castile*, Anno 1257. whose Daughter, *Beatrix*, he then married.

The Arms of the King of *Denmark* are, Party of 3 and Coupe of 2, which make 12 Quarters. In the First, Or Semi of Hearts, Gules 3 Lyons Passant Gardent in Pale Azure for *Denmark*. Second, A Lyon Rampant Crowned and Armed Or, holding a Battle Axe Argent Hilted of the 2d, for *Norway*. Thirdly, Gules a Lyon Passant Gardent Or, on 9 Hearts of the same, in Fefs for *Gothland*. Fourthly, *Schonen*, viz. Gules a Dragon Crowned Or. Fifthly, Azure 3 Crowns Or for *Sweden*. Sixthly, Gules a Paschal Lamb Argent, supporting a Flag of the same Marked with a Cross Gules for *Fuitland*. Seventhly, Or, 2 Lyons Passant Gardent Azure for *Sleswick*. Eighthly, Gules a Fish Crowned Argent for *Zeland*. Over these 8 Quarters a great Cross Argent (which is the antient Device of the Kingdom) on the Center of which is placed the Arms of *Dithmarsh*, viz. Gules a Cavalier Armed Argent. Ninthly, Gules

The Arms of the
King of *Denmark*.

Gule a Nettle-Leaf open and charged in the Middle with a little Escutcheon, the whole Argent for *Holstein*. Tenthly, Gules a Cygnet Argent Gorged with a Crown Or for *Stormarsh*. Eleventh, Gules 2 Fesses Or for *Delmenhorst*. Twelfthly, Gules a Cross Patee Fitchy Argent for *Oldenburgh*. The Shield surrounded with the Collar of the Order of the Elephant. The Crest is a Crown flowered, raised with 8 Diadems terminating in a Mound of the same. The Motto to his Device on the Reverse of his Medals is, *Pietas & Justitia coronant*.

The Arms of the
King of Sweden.

The Arms of the King of *Sweden* are, Quarterly, in the 1st and 4th Azure, 3 Crowns for *Sweden*. In the 2d and 3d Barry Argent and Azure a Lyon Or Crowned Gules for *Finland*. On the whole Quarterly, in the 1st and 4th Sable a Lyon Or, Crowned Langued and Armed Gules for the *Palatinate* of the *Rhine*. The 2d and 3d Fusilee in Bend, Argent and Azure of 21 Pieces for *Bavaria*. The Crest a Royal Crown garnished with 8 small Flowers, and closed by as many Demi-Circles, terminating in a Mound Or, which is the Crest of *Sweden*. The Supporters are 2 Lyons Or, Crowned with the same. And his Motto, *Dominus Protector meus*.

The Arms of the
King of Poland.

The Arms of the King of *Poland*, Quarterly, in the 1st and 4th Gules an Eagle Argent Crowned and Armed Or for *Poland*. In the 2d and 3d Gules a Cavalier Armed Cap-a-pe Argent, in the Dexter a naked Sword of the same, in the Sinister a Shield Azure charged with a double Barr'd Cross Or, Mounted on a Courser of the 2d, Barbed of the 3d, and Nailed of the 4th, for *Lithuania*. On the whole the Arms of *Saxony* (this King *Augustus* being Elector of *Saxony*) viz. Barry of 6 Or and

and Sable, a Bend Vert. For the Crest a Crown raised with 8 small Flowers, and closed with 8 Semicircles, terminating in a Mound Or. The Shield is environed with the Order of *France*; and the Motto, *Habent sua sidera Reges*.

The Bend, in the Coat of the Electorate of *Saxony*, was added by *Frederick Barbarossa*, when he invested *Bernard* of *Anhalt* in that Dukedom; who desiring some difference to be added to his Arms to distinguish him from the former Dukes, the Emperor took a Chaplet of Rue (he wore on his Head) and threw it thwart his Buckler, which was thereon presently Painted, *Teste Heylin*.

The Arms of the King of *Prussia* are, Argent an Eagle Vert, Membred and Crowned Or, Langued Gules for *Prussia*. As Marquiss of *Brandenburg*, he bears divers Quarterings, containing several Alliances and Principalities, over all Azure a Scepter in Pale Or, which belongs to the Electorship, a Triple Helm, and a Triple Crest.

The Arms of the King of *Prussia*.

The Arms of the Pope are those of the Papedom (which are put for a Crest to their Gentilitial Arms) viz. The Papal Escutcheon Gules, consisting of a long Cap or Head-piece Or, surmounted with a Cross Pearl, and garnished with 3 Royal Crowns, and 2 Keys of *St. Peter* placed in Saltier.

The Arms of the Pope.

Boniface VIII. was the first that wore the *Tiara* with a double Crown; and *Urban V.* made it in a Form of Cap, adorned with a Triple Circle of Gold for some Mystery contained therein. It's called the *Regnum*; because it denotes the Dignity and Power of Priest and Emperor.

Some

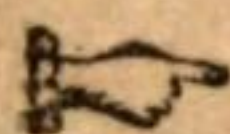
Some Popes had for their Devise, *Innocens manibus & mundo corde.*

The Arms of the
Great Duke of
Tuscany.

The Arms of the Great Duke of Tuscany, is Or, 5 Torteauxes, 2, 2, and 1. and one Roundle in Chief Azure charged with 3 Flowers de Liz Or.

The Arms of the
Duke of Savoy.

The Arms of the Duke of Savoy, are Gules a Jerusalem Cross Argent; and as King of Cyprus, he bears the Arms of that Kingdom, viz. Quarterly, 1. A. a Cross Potent between 4 Crosslets Or; 2. Barwise of 8 Pieces Argent and Azure, supporting a Lyon Passant B. crowned Or; 3. Or a Lyon Gules; 4. Argent a Lyon Gules. (*Teste, Bara.*)



The Jerusalem Cross was given to *Amadeus Magnus* by the Knights of Rhodes, Anno 1315. with these Letters in lieu of a Motto, F.E.R.T. (See in GRAMMAR.) The occasion was, *Amadeus* V. surnamed *Magnus*, forced *Mahomet* II. Emperor of the Turks to raise his Siege, Anno 1315. from before the City of Rhodes. Before that, the Duke of Savoy's Arms were Or an Eagle displayed with 2 Heads Sable armed Gules, supporting in Fess an Escutcheon of Saxony, a Coat belonging to the Emperors of the House of Saxony, from whom the first Earls of Savoy derived it.

The Arms of the
Duke of Mantua.

The Arms of the Duke of Mantua, are Argent, a Cross Patee Gules, inter 4 Eagles Sable, under an Escutcheon in Fess, charged Quarterly with Gules, a Lyon Rampant Or, and Or 3 Bars Sable.

The Arms of the
Duke of Modena.

The Arms of the Duke of Modena, are Palewise of 3 Pieces; 1. Party per Fess in Chief Or, an Eagle displayed Sable, Membred, Beak'd, and Crowned, Gules and in Base, France, within a Bordure Indented Or and Gules; 2. Gules 2 Keys in Saltier, one Or, the other

other Argent charged in Fefs, with an Escutcheon of Pretence Azure, supporting an Eagle of the Third, Membred and Crowned of the Second, over all in the Chief a Papal Crown Or, garnished with fundry Gems Azure and Purple; 3. as the first counterplaced.

The Arms of the Duke of *Parma* and *Placentia*, are Or, 6 Flower de Lucas Azure.

The Arms of the Duke of *Parma* and *Placentia*.

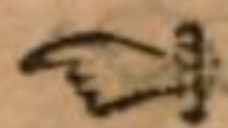
The Arms of the Duke of *Lorrain*, contains many Escutcheons, over all Or, a Bend Gules charged with 3 Alerions (Birds wanting Beaks Legs and Feet) Argent. The Devise an Armed Hand, issuing from the Clouds, and grasping a Sword with this Motto, *Fecit potentiam in Bracchio suo*.

The Arms of the Duke of *Lorrain*.

The Arms of the Elector and Archbishop of *Mentz*, is Gules a Cart-Wheel Or, and over it an Electoral Cap.

The Arms of the Elector of *Mentz*.

The Wheel is born in remembrance of the first Elector of this Church, who being the Son of a Carman, kept always (thro' Humility) a Wheel in his Chamber to mind him of his Extraction.



The Arms of the Elector and Archbishop of *Triers*. ———

The Arms of the Archbishop of *Triers*.

The Arms of the Archbishoprick of *Cologn*, is a Cross Sable in a Field Argent.

The Arms of *Cologn*.

The City of *Cologn*, in regard it can shew the Monuments of the three Kings who offered to our Saviour, beareth Argent on a Chief Gules 3 Crowns Or.



The Arms of the Elector of *Bavaria*, are 3 Escutcheons joined together; 1. Sable a Lyon Crowned Or for the Palatinate; 2. Fusile in Bend Argent and Azure of 21 Pieces for *Bavaria*; 3. Gules an Imperial Globe Or for the Electorate.

The Arms of the Elector of *Bavaria*.

The



The *Bavarian* Arms, Paly Bendy Argent and Azure, were anciently born by the Dukes of *Bavaria*, for that it resembled the Party-coloured Cassocks of the Ancient *Boij*, who were those *Gauls* that attempted the Surprise of the Capitol.

Electoꝛ of Saxo-
ny's.

The Arms of the Electoꝛ of *Saxony*. See in the King of *Poland's* Arms.

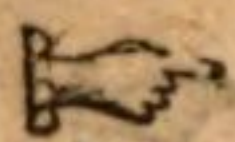
Electoꝛ of Bran-
denburg's.

The Arms of the Electoꝛ of *Brandenburg*. See in the King of *Prussia's* Arms.

Electoꝛ Palatine's.

The Arms of the Electoꝛ *Palatine* Quarterly; in the 1st and 4th, Sable a Lyon Or Crowned, Langued, and Armed, Gules for the Palatinate. In the 2d and 3d, Fusile in Bend, Argent and Azure of 21 Pieces, with a Mound Or, which belongs to the Electorate.

The Arms of the
States of *Holland*.



The Arms of the States of *Holland*, are Or a Lyon Gules, holding with one Paw a Cutle-afs, and with the other a bundle of 7 Arrows closely bound together, (alluding to the 7 Confederated Provinces) with this Motto, *Concordia res parvæ crescunt*.

The Arms of the
Republick of *Venice*.

The Arms of the Republick of *Venice*. Azure a Lyon Winged Sejant Or, holding under one of his Paws a Book covered Argent.

The Arms of the
Republick of *Genoa*.

The Arms of the Republick of *Genoa*. Argent a Cross Gules with a Crown closed, by reason of the Isle of *Corfica* belonging to it, which has the Title of Kingdom. The Supporters are 2 Griffins Or.

The Arms of the
Republick of *Ragusa*.

The Arms of the Republick of *Ragusa*, is the Image of the Virgin *Mary*.

The Arms of the
Republick of *Luca*.

The Arms of the Republick of *Luca*, are Azure a Bend (on which is written LIBERTAS) betwixt 2 Cottises.

The Arms of the
Republick of *Geneva*.

The Arms of the Republick of *Geneva*, are Party *per* Pale Or and Gules, in the first a De-
mi-

mi-Eagle displayed Sable, the second a Key Argent, with this Devise, *Post Tenebras Lux*.

Every Canton of Switzerland has its peculiar Coat of Arms, and Blazoned in French, thus, 1. *Zurich, Porte d'Argent taille d'Azure*.

The Arms of the
Switz. Cantons.

These Arms are supported by a Lyon standing upright, holding a Bowl or Roundure of the World, with his left Paw forward, and with the other a Sword. 2. *Bern, Porte de Guelles*

a la Bande Or, chargee d'un Ours Rampant de Sable. The Supporter a Bear standing upright, having on his Thigh a Sword girded. 3. *Lucern, Porte d'Argent Party d'Azure*. The

Supporter a naked Switzer, his Head and Natural Parts covered with Oaken Branches, and holding in his Right Hand a Bough of the same. 4. *Uri, Porte d'Or a une Teste de*

Busle de Sable, acorne & busle ou emboucle de Guelles. The Supporter a Switzer armed with a Sword and a Poniard. 5. *Switz, Porte de*

Guelles a la Croisette de Argent au Quartier Gauche. The Supporter a Switzer armed, bearing a plain Cross upon the Breast-Plate, and a Banner of the same. 6. *Undervald,*

Porte de Guelles coupe de Argent. The Supporter a Griffin. 7. *Zug, Porte d'Argent a la*

Face d'Azur. The Supporter an armed Switzer, bearing a Launce in his Left Hand. 8. *G'arys, Porte de Guelles au Saint Jacques*

d'Argent a son Bourdon d'Or. The Supporter an Angel. 9. *Basile, Porte d'Argent al' Estuy*

de Crosse d'Evesque de Sable. The Supporter a Dragon winged, with two Griffins Feet. 10. *Friburgh, Porte de Sable Coupe d'Argent*.

The Supporter a Servant Switzer, without any other Arms than a Sword. 11. *Soluthorn, Porte d'Argent coupe de Guelles*. The Sup-

porter a Switzer armed, bearing a Banner of
the

the Canton. 12. *Schaffhausen, Porte d' Or a un Belier Sautant de Sable Acorne d' Argent.* The Supporter a Ram. 13. *Appenzel, Porte d' Argent al' Ours debout de Sable.* The Supporter a Bear standing upright, with the Throat fuming or smoaking out.

The Cham of
Lesser Tartary's
Arms.

The Cham of *Tartary* in *Europe* (called *Crim Tartary*) bears Or 3 Griffins Sable Armed Gules.

The Arms of the
Great Cham of
Tartary.

The Great *Cham* of *Tartary* in *Asia* (who is also Emperor of *China*) bears Or an Owl Sable.

The Arms of the
Emperor of *China*.

The Emperor of *China* bears Argent 3 Black-a-Moors Heads placed in the front, their Bust Vested Gules. (But some say the Arms are 2 Dragons.)

The Arms of the
Great *Mogul*.

The Arms of the Great *Mogul* of *India*, are said to be Argent, Semi of Beasants. Note, As for particular Coats of Arms, peculiar to private Persons, here are none in the *India's*, no Man within the *Mogul's* Dominions being Hereditary either to his Estate or Honour. And of all the *Asians* in general, their Coats of Arms are nothing like those which the Families of *Europe* bear, being composed only of the Letters of their Names, to which they add sometimes the Names of their Predecessors. *Teste, Morden, p. 343.*

The Arms of the
Sopli of *Persia*.

The Arms of the Great *Sopli* of *Persia*, are various, some say he bears the Sun in his Glory on a Field Azure; others say, a Crescent like the *Turkish* Emperor, having only a Hand added to it; others would have it, Or, a Dragon Gules; others again, Or, a Buffalo's Head Sable; but the last and most received is, the Rising Sun, on the Back of a Lyon, with a Crescent.

The

the Family of Curzon

Esq. An.
1611

Curzon
of Kedleston

Uxor
ejus

ry Curzon of the Inner Temple London	Eleanor Da. of Lea of an Antient Family in Lancash. and Cheshire	2	3
		Rich ^d Curzon	Thomas Curzon
Francis Curzon Dyed an Infant.	Kath. Cur- zon Dyed unmar. An. 1695 Feb 19	Hen: Curzon Junior	James Curzon

The Arms of the Emperor of *Japan* (according to the Relations of the *Dutch East-India Company's* Ambassadors) are, Or, 6 Stars Argent in an Oval Shield, and bordered with little Beasants or Points of Gold. There are some that say his Arms are Sable 3 Trefoils Argent.

The Arms of the Emperor of *Japan*.

The Arms of the Emperor of *Fez* and *Morocco* (in *Barbary* in *Africa*) are 3 Wheels Argent in a Field

The Arms of the Emperor of *Morocco*.

The Arms of the Emperor of *Abyssinia* (or *Ethiopia*) are a Lyon supporting a Cross, with this Motto, *Vicit Leo de Tribu Juda*.

The Arms of the Emperor of *Ethiopia*.

And this may suffice, there being no other Princes known to bear Arms (than what is Inserted before) either in *Asia*, *Africa*, or *America*, especially the two latter, where the People are very Illiterate, Rude, Barbarous, and unknowing of Religion, Arts, or Arms.

For the Reader's Insight into the Manner and Nature of a Geneology, take here the Pedigree of the Ancient and Honourable Family of *Curzon*.

The Arms of the Family of *Curzon*.

Of Heraldry are extant these

AUTHORS,

Boswell, *Ferne*, *Bara*, *Chassaneus*, *Guillim's Heraldry*, *Gerrard Leigh's Accidence of Armory*, *Blome's Heraldry*, *Yorke's Heraldry*, *Dugdale's Baronage*, *Synopsis of Heraldry*, *Original and Growth of Heraldry*; *Peacham*, in his *Compleat Gentleman*. See also *Favel's Heraldry*.

Of PAINTING.

The Theban Law
made Artificers
and Painters that
did not use their
utmost Skill to pay
a Pecuniary Mulet.

PAINTING doth borrow its Experience from Geometry, and is called in *Latin*, *Pictura*; being a wonderful Art, imitating the Shapes of Natural Things, by an accurate Description of the Lineaments, and apt Choice of Colours. In ancient Times it was accounted the Chief of all the Liberal Sciences, and throughout all *Greece* taught only to the Children of Noblemen in the Schools, being prohibited the common sort; nor was it in less Esteem among the *Romans*.

Painting is nothing else but Mute Poetry, and Poetry a Speaking Picture; for as Poets, so Painters feign Histories and Representations of all Things; expressing and figuring every Thing, even the Passions of Men, and Senses of the Mind, nay, almost the Voice it self.

Introduction to
the Art of Paint-
ing,

The Introduction to this Curious Art, is steady Practice and good Observation, preparing your self with *French Red* and *White Chalk*, and *Black Lead* cut into taper Pencils, to draw the Out-strokes of any Figure; and at your Entrance into Draught, accustom your Hand to the general Figures of Circles, Ovals, Squares, Triangles, &c. (without the help of Compasses.) Circles are useful in all Orbicular Forms, Ovals give a just Proportion for the Face, Squares for all manner of Ground-Plots, Forms of Fortification, &c. Triangles or Cones, Tops of Towers, Steeples, Pyramids, &c.

Next try to draw several sorts of Fruits, and Flowers, Birds, and Beasts, considering well their Colour, Proportion, Slowness, Swift-ness,

ness, Fierceness, and other Natural Qualities. Also Fish, making your Hand fit in their general Proportions; learn to give all Bodies their true Shadows, according to their Eminence and Concavity, to heighten and deepen, as the Body, &c. appeareth farther or nearer the Eye, or the Light, which is the chief Matter required in this Art. Also in Drapery, give Garments and all manner of Stuffs, Cloth, Silk, their natural and proper Folds, leaving spaces within for the greater or lesser Folds, and break them into lesser, observing the closer the Garment fits to the Body (as under Garments) the smaller must be the Folds, and break them off where occasion requires it.

Proportion (as is said) is the Principal Thing to be learn'd, for which you may have recourse to the Painting, and the Book of Symmetry and Proportions of *Albert Durer*, if you can obtain the sight of either, being valuable among Painters. For a bold Touch, variety of Postures, curious and true Shadow, imitate *Goltzius*; for Natural Shadows, the Countenance, Cast and Form of the Eye, Mouth, &c. *Shadan Wierix*, and of *Crispin de Pas* of *Utrecht*; or otherwise, of the best Prints and Paintings you can come by, among Collections, or Masters in Repute, &c.

When ready in your Draught (for which you must provide Pens of Ravens Quills for fine Strokes, and good dry Pencils, &c.) learn to mix your Colours. Note, That in Drawing Faces, you must consider in what Posture it must be done, whether sideways, forwards, upward, or downward, touching lightly the Features, where the Eyes, Nose, Mouth, and Chin ought to be, observing well the Muscles in the Face, which in ancient Persons appear

Observations in
Drawing, and Di-
rections therein.

much, and giving a due Proportion to each part of the Face, and each Face differing still as the Posture alters, not forgetting Passions, Gestures, &c. In Drawing, begin first at the Head, and proceed by degrees 'till you come to the Feet, running it lightly over at the first; and as there seems occasion, encrease the fulness, &c. In a Figure supposed to be standing, draw that Leg the Body rests on straight and steady, or it will seem falling, and remember the Shadows according to the Number of the Figures presented close together, and the Nature of the Light coming upon them.

Painting in Oyl requires greater Judgment, and is more esteemed generally than working in Water-Colours; but then it is not of so quick Dispatch (for Gentlemen who have Studies, or Places of Employ at Court to follow) and is accounted more Mechanick.

Your Cloth primed, and your Drawing put on, next follows preparing the Colours, which in Oyl-Painting may be with Linseed Oyl, unless for Linen, or any white Resemblance, then Walnut Oyl is best, because 'twill not turn yellow as the other will, when mixed with curious white.

The Colours must be ground on a Stone with a Muller, 'till they are as fine as Butter, &c. For the

Colours of each
sort.

Blacks, Sea-coal-Black, Ivory-Black, Lamp-Black, and Earth of Colleen.

Whites, White-Lead.

Green, Terravet, Verditer, Verdigreece.

Yellow, Spruce-Oaker, Pink, Orpiment, Masticot.

Blues, Smalt, Bise, Indico, Ultramarine.

Reds,

Reds, Red-Lead, Vermilion, Lake, Indian-Red, Ornatto-Carmine.

Indifferent Colours, are Umber, Spanish-Brown, Burnt-Spice, &c.

These are the Chief to be laid in Oyl, but Ivory, Spruce, Oaker, and Umber must be burnt before they are ground; and as for Masticot, Ultramarine, Vermillion, Smalt, and Orpiment, they may be tempered on your Palette without grinding; but are better with grinding, for that it mixes them better with the Oyl.

Your Pencils must be good, and of all sizes; there must be a Palette, or Board to lay Colours on whilst you use them; an Easle to place your Cloth upon or against, and a straining Frame, to which it must be nailed; a Moll-Stick, or Stay, that's of heavy Wood, not subject to bend, about a Yard long, at one end tye a Ball of ravelled Cotton, with a Leather over it, so that with your Left Hand, holding it against the Work, you may support your Right Arm whilst Painting.

Of Pencils, Palette,
&c.

Of mixing your Colours, take Notice that to make

Tempering of
Colours.

A Violet-Colour, take Indico, White-Lead and Lake, mix them well, and the more or less of each Quantity will make it deeper or lighter.

A Lead-Colour, make of White and Indico, well mixed together.

A Bay-Colour, make of Spanish-Brown and White mixed.

A Scarlet-Colour, make of Lake, Red-Led, and a little Vermilion.

A Light-Green, make of Pink and Smalt; for a Middle and Grass-Green, Verdigreece

and Pink; for a Deep and Sad-Green, Indico and Pink.

A Purple-Colour, make of Spanish-Brown, Indico, and White, well mixed.

A Murrey-Colour, make of Lake and White.

A Flame-Colour, make of Red-Lead and Masticot, heightned with White.

By often tempering of Colours and Practice, you will soon find out the rest; remember to lay Yellows, Blues, Reds, and Greens upon a White Ground, which giveth them Life.

Beginning of a
Picture.

To begin a Picture, first draw the Eye, the White thereof make of White-Lead, with a little Charcoal-Black; having finished it, leave from the other Eye (in a Face full front) the distance of an Eye, then draw the Proportion of the Nose, the Compass of the Face, after that make the Mouth, Ear, Hair, &c. After you have made the White of the Eyes and Proportion of the Nose, &c. lay your Carnation or Flesh-Colour over the Face, casting in here and there some Shadows, which work in with the Flesh-Colour by degrees. The Flesh-Colour is commonly compounded of White-Lead, Lake, and Vermilion, but you may heighten or deepen at Pleasure. Then Shadow the Face over as you see cause, and finish the Nose, compassing the Tip of it with some dark or light redish Shadow. The Shadows for the Face are compounded commonly of Ivory-Black, White-Lead, Vermilion, Lake, Sea-coal-Black, &c. Then Shadow the Cheeks and Lips (with the Mouth-Stroke, which make of Lake only) with Vermilion and Lake mix'd together. To make the Circles of the Eyes, for the grey Eye, take Charcoal-Black and White-Lead, heightned,

Flesh-Colour.

Shadows of the
Face,

Circles of the
Eyes.

heightned or deepned at pleasure; for the black Circle of the Eye, take Umber, Sea-coal-Black, and a little White mixed. For the round Ball in the Eye, take Lamp-Black and Verdigrease, for Lamp-Black will hardly dry without it.

Ball in the Eye.

For the Hands and the Shadows between the Fingers, use the same Flesh-Colours and Shadows as in the Face. If you would make a Flesh-Colour of a swarthy Complexion, mingle White-Lead, Lake and Yellow-Oaker, and in the Shadows put in some Umber and Sea-coal-Black.

For the Hands.

For black Hair, take Lamb-Black only, and when you would have it brighter, mix it with a little Umber, White and Red-Lead; for flaxen Hair, take Umber and White-Lead, the browner you would have it, put in the more Umber, the whiter more White; but if darker yet, add a little Sea-coal-Black; for yellow Hair, take Masticot, Umber, Yellow-Oaker, and a little Red-Lead; if you would have it redder put in the more Lead and Umber; for white Hair, take half Ivory-Black, and half of Umber, and with a Knife temper them well upon your Palat with White-Lead, with more White, or Umber, or Ivory, raising or deepning it at pleasure.

For the Hair.

For the Teeth, take White-Lead and Shadow it with Charcoal-Black.

By this time your Skill will arrive to understand the compounding of other Colours for Velvets, Garments, Armours, Ruffs, Lawns, Linen, Cloth, Leather, or what other Thing is required in your Sculpture; or if not, have recourse to the Works of those Authors named at the end of this Treatise.

For the greater and better Accomplishment of the Practitioner in this Art, as also for that we often find People of good reasonable Judgment in the Worth of a Piece of Painting, are yet wanting in the Knowledge of the Figure or Design, (especially among a large Collection they can hardly tell two in six what they are meant for, unless assisted by some Painter) therefore also for their better Insight (if they desire it) into Sculptures, characterized and drawn for the *Roman* Gods, Goddeses, Emperors, Kings, Sybils, Nymphs, Muses, &c. take the following Explanations, omitting those of History and Mythology, which are various, and would make up Volumes beyond the Compass of this Work. Yet let the Reader *Note* the Paintings following are sometimes painted with some other little differences perhaps, according to the Fancy of Painters, or Actions of History.

The Heathen Gods, how Painted.

Heathen Gods,
how Painted.

Jupiter with long black curled Hair, in a Purple Robe trim'd with Gold, and sitting on a golden Throne, or Eagle's Back, with bright yellow Clouds around him, and Thunderbolts in his Hand.

Apollo, or *Sol*, with long curled yellow Hair, crowned with Laurel, a Purple Robe on, a Silver Bow in his Hand, and a Throne of Emeraulds.

Mercury with long yellow curled Hair, in a Coat of Flame-Colour, with a Mantle purely white, trim'd with Gold and Silver, his Beaver white, with white Feathers, or Wings at his Head and Feet, in his Hand a *Caduceus*, or Rod of Silver, with two Serpents twining.

Neptune

Neptune with long hoary Hair, in a blue or Sea green Mantle, trim'd with Silver, riding in a blue Chariot drawn by monstrous Fishes, or on a Dolphin's Back, with a Silver Trident in his Hand.

Pluto with long curled black Hair, in a Robe of Flame, or Cloth of Gold.

Bacchus with short brown curled Hair, with a Leopard's Skin spotted, or in a green Mantle, with a red flushing full Face, and a Wreath of Vine Branches.

Hymen with long yellow Hair, in a Purple or Saffron-colour'd Mantle, and a Torch in his Hand.

Vulcan is painted in a Scarlet Robe, having an Anvil by him.

Triton (*Neptune's* Trumpeter) with a blue Skin, and in a Purple Mantle, having a Horn in his Hand, and the Tail of a Mermaid.

Cupid was painted by *Zeuxis*, the famous Painter of *Greece*, in a green Robe; he is generally painted naked, like a Youth, having a loose playing Garment, Wings on his Back, his Eyes bound over, and a Bow and Quiver of Arrows.

Minos (one of the Judges of Hell) with long brown curled Hair, crowned with a gold Crown, his Robe blue and silver, his Buskins of gold.

Momus (the Carping God) with a darkish Robe, his Beard and Hair party-colour'd.

Heathen GODDESSES, how Painted.

Juno (the Queen) with black Hair, and bright Eyes, adorned with a Sky-colour'd Mantle, or Pied, wrought with Gold and Peacocks Eyes, like the Orient Circles in a Peacock's Train.

Diana

The *Phanician*, who were famous Merchants, and scarce knew any other God besides their Gold, Painted their Idols with large Purfes by their Sides full of Money.

Heathen Goddesses, how Painted.

Diana (of Chastity) with yellow Hair, a Grass-green Mantle trim'd with Silver, Buskins Silver, a golden Bow and Quiver of painted Colours, and a Crescent or New-Moon upon her Head. She is sometimes drawn hunting a Stag, at other times sitting cross Legg'd, denoting Virginity.

Pallas in a blue Mantle imbroidered with Silver.

Venus with Gold-Hair, a beautiful Look, and attired with a Black, Scarlet, or Dun-coloured Robe, and *Cupid* her Son by her; sometimes Doves and Cypress-Trees are seen by her.

Ceres with yellow Hair, and a Straw-coloured Mantle trim'd with Silver.

Tellus in a green Mantle.

Proserpina (Queen of Hell) in white Garments filled with Flames.

Astræa in a Crimson Mantle trim'd with Silver.

Flora in a Mantle of divers Colours, and a Garland of Flowers.

The *Three Graces* in Silver Robes.

Night in a black Mantle, spotted with Stars of Gold.

EMPERORS, KINGS, and QUEENS, how Painted.

Emperors, Kings,
and Queens, how
Painted.

Moses with bright Hair, a beautiful Visage, representing him in Years; on his Head two Radiant Horns, and round his Head a Glory.

David (King of *Israel*) with brown Hair, ruddy Complexion, and an Harp.

Alexander the Great with brown Hair, and ruddy Complexion.

Numa

Numa Pompilius with white Hair, crowned with a Silver Bend, or Diadem, a Crimson Robe trim'd with Gold, his Mantle yellow trim'd with Silver, his Buskins, Watchet and Silver.

Aeneas (the Trojan Prince) in a Purple Mantle trim'd with Gold.

Mahomet in Garments all of green, with a Turbant on his Head.

Gustavus Adolphus (King of Sweden) with yellow Hair.

Roman Emperors with yellow Cuirassiers, imbroidered with Silver; the Labels of the Sleeves and short Bases of Watchet, the under Sleeves and long Stockings white, a Laurel Wreath with a Silver Jewel before, and Rays of Gold issuing from the Wreath.

German Emperors with a Violet-coloured Robe, Watchet, or Light-colour.

Dido (Queen of Carthage) in a Purple; or Scarlet Mantle; under her Garments a golden Quiver, her Hair yellow, tied up with Spangs, and Knots of Gold, a Dagger in her Breast, or in her Hand, and a small Wound in her Bosom.

Cleopatra with large Pearls in her Ears, and an Asp at her Arm.

Elizabeth (Queen of England) pale Faced, Light-brown Hair, grey Eyed, a Ruff about her Neck, and Fardingale about her Waste.

King Charles I. with black Hair, a pecked Beard and Whiskers.

PHILOSOPHERS and SIBYLLS, how Painted.

Philosophers and
Sybils, how
Painted.

Pythagoras in white Garments, with a Crown of Gold.

Empedocles in Violet, Murrey, or Purple, and so of the rest of the *Grecian* Philosophers.

Machiavel in Italian Robes, with a Paper rouled up in his Hand.

Erasmus yellow Hair'd, grey Eyed, and somewhat Pale.

Beza with white Hair.

Heracitus in a weeping Resemblance.

Democritus in a laughing Posture.

Sibylla Agrippa, an old Woman in a Roseal Garment.

Sibylla Lybica, an old Woman crowned with a Garland of Flowers, in Purple Garments.

Sibylla Delphica, a young Woman with a black Garment, and a Horn in her Hand.

Sibylla Phrygia in red Garments, having a Saturnian old favour'd Face.

See the Treatise
of Errors amongst
the People, about
the Ten Syhils.

Sibylla Herophil, young and fair, her Head covered with a Veil of Lawn, and a Purple Garment on.

Sibylla Europea, a comely young Woman, but with a red Face, a fine Veil on her Head, and clad in a Garment of Gold-work.

Sibylla Persica with a white Veil, and a golden Garment.

The MUSES, how Painted.

Muses, their several
Denominations.

The Muses, or Goddesses of Learning, are by *Latin* Poets called by the several Names of *Aganippides*, *Aonides*, *Camana*, *Castalides*, *Cytheriades*, *Heliconiades*, *Hippocreniades*, *Libethriades*,

thriades, Parnassiades, Pegaseides, Pierides, Pimpleides, Thespiades, from Fountains, Regions and Hills (bearing those Names) Sacred to the Muses. The Muses had their Names, as *Eusebius* saith, *παρὰ τὸ μῦθεῖν*, which is to Instruct, because they teach the most honest and laudable Discipline.

Clio is painted with a Coronet of Bays, in her Right Hand a Trumpet, in her Left a Book, upon which is sometimes written *Historia*. Her Name is from Praise or Glory.

Muses, how Painted.

Euterpe, crowned with a Garland of Flowers, holding in each Hand fundry Wind Instruments. Her Name is from giving Delight.

Thalia with a smiling Look, on her Temples a Coronet of Ivy, in a Mantle of Carnation, imbroidered with Silver-Twist and Gold-Spangles, and in her Left Hand a Vizard. Her Ivy shews she is Mistress of Comical Poesy.

Calliope, on her Head a Coronet of Gold, on her Left Arm Garlands of Bays, in store, for the Reward of Poets, and in her Right Hand three Books, on which is writ, *Homer, Virgil, Ovid*.

Melpomene, like a *Virago*, with Majestick and Grave Countenance, adorned on her Head with Pearls, Diamonds, and Rubies, holding in her Left Hand, Scepters with Crowns upon them, other Scepters and Crowns lying at her Feet; in her Right Hand a naked Poniard, on her a Mantle of changeable Crimson. Her Gravity befits Tragick Poesy.

Polyhymnia, drawn acting a Speech with her Fore-finger, all in White, her Hair hanging loose about her Shoulders of an Orient Yellow, upon her Head a Garland of the choicest Jewels,

els, intermix'd with Flowers, and in her Left Hand a Book, on which is written *Suadere*. Her Name imports Memory, to whom the Rhetorician is beholden.

Erato with a sweet and comely Visage, her Temples girt with Mirtles and Roses, bearing a Heart with an Ivory Key by her side. By her side also *Cupid* winged, with a lighted Torch, having at his Back his Bow and Quivers.

Terpsichore, a cheariful Visage, and playing on some Instrument; on her Head a Coronet of Feathers of fundry Colours, but chiefly Green, in token of the Victory the Muses got over the Syrens, &c. by Singing.

Urania, a beautiful Lady, in an Azure Robe, upon her Head a Coronet of bright Stars, in her Right Hand the Celestial Globe, in her Left the Terrestrial. Her Name imports as much as Heavenly. *Urania Cæli Motus Scrutator & Astra*.

The POWERS, how Painted.

The Powers, how Painted.

Eternity, like a fair Lady, having three Heads, signifying Time past, present, and to come. In her Left Hand a Circle, signifying she hath neither Beginning, Middle, nor End, pointing with the Fore-finger of her Right Hand to Heaven. In the Medals of *Trajan* she was figured Red, sitting on a Sphere, the Sun in one Hand, the Moon in the other. (By her sitting was signified perpetual Constancy.) In the Medals of *Faustina* she was drawn with a Veil, and in her Right Hand a Mound.

Time standing on an old Ruin winged, and with Iron Teeth, or an old Man bald winged, with

with a Scythe and an Hour-Glass. This is sometimes taken for *Saturn*.

Fortune, a naked Lady, having an Ensign or Sail over-shadowing her, standing upon a Globe or Ball.

Equality, a Lady lighting two Torches at once.

Victory, a Lady clad all in Gold, in one Hand a Helmet, in the other a Pomegranate. By the Helmet is meant Force, by the Pomegranate Unity of Wit and Counsel. *Augustus* drew her with Wings ready to fly, standing upon a Globe with a Garland of Bays in one Hand, in the other a Coronet of the Emperor, with *Imperator Caesar*. In the Medals of *Octavius* she is drawn with Wings, standing on a Base, in one Hand a Palm, in the other a Crown of Gold.

Peace, holding in her Hand a Wand or Rod towards the Earth over a hideous Serpent, her other Hand covering her Face, as loath to behold Strife or War. *Trajan* gave a Lady with an Olive Branch in her Right Hand, and in her Left a *Cornucopia*. In the Medals of *Titus*, a Lady, in one Hand an Olive-Branch, the other leading a Lamb and a Wolf yoked by their Necks. The Olive is an Emblem of Peace, as also is the Dove.

Emblem.

Providence lifting up both her Hands to Heaven, with these Words, *Providentia Deorum*. Or a Lady with a Scepter in her Right Hand, a *Cornucopia* in her Left, and a Globe at her Feet.

Concord, a Lady sitting with a Charger in her Right Hand for Sacrifice, a *Cornucopia* in her Left, with the word *Concordia*. Or thus, with a fair Virgin, holding in one Hand a Pomegranate, in the other a Myrtle-Bush. The Nature

Nature of these Trees are, that if planted a tolerable space from one another, they will meet, and with twining, Embrace one another.

Fame, a Lady, or Angel clad in a thin and light Garment, open to the middle Thigh that she might run the faster; also her Wings large and Garments imbroidered with Eyes and Ears, and blowing a Trumpet.

Emblems.

Vertue is represented by *Hercules* naked; with his Lyon's Skin, knotted Club, performing some one of his Labours, as offering to strike a Dragon keeping an Apple-Tree, or holding in his Hand three golden Apples. He is drawn naked to shew Virtue's Simplicity; by the Dragon is meant all manner of Vices; by the Lyon's Skin, Magnanimity; by his Oaken Club, Reason; by its Knottiness, the Difficulty and Labour in seeking after Virtue; by the three golden Apples, three Virtues, Moderation, Content, and Labour.

Piety with a sober Countenance, in her Right Hand a Sword stretched over an Altar, in her Left Hand a Stork, by her side an Elephant and a Child.

Hope, a beautiful Child in a long Robe, hanging loose, standing on Tip-toes, and a Trefoil in its Right Hand, and in its Left an Anchor.

Mercy, a Lady sitting upon a Lyon, holding in one Hand a Spear, in the other an Arrow, which she seemeth to cast away. In the Medals of *Vitellius* she sits with a Branch of Bays in her Hand and a Staff lying by her.

Felicity, a Lady sitting on an Imperial Throne, in one Hand a *Caduceus*, or Rod, in the other a *Cornucopia*.

Fruitfulness, a Lady sitting upon a Bed, and two little Infants hanging about her Neck.

Dissimu-

Disimulation, a Lady wearing a Vizard of two Faces, in a long Robe of a changeable Colour, and in her Right Hand a Magpye.

Security, a Lady leaning against a Pillar before an Altar, with a Scepter in her Hand.

The NYMPHS, how Drawn.

ΝΥΜΦΗ, *Nympha*, a Bride, from νεον and παρ-
νεοθαις, as it were a fresh or new Creature, or
as some will have it, from *Nympha quasi Lym-*
pha, by changing L into N after the *Dorick*
Dialect. It is nothing else but an Allegory
from the Vegetative Humidity which gives
Life to Trees, Herbs, Plants, and Flowers, by
which they grow and increase. They are
feigned to be the Daughters of the Ocean, the
Mother of Floods, and Goddesses of Fields,
who have the Protection and Charge of Moun-
tains, Meadows, Rivers, Trees, Herbs, and
Woods.

Nymphs, whence
the Name.

Napæe, Nymphs of the Mountains, are
drawn with a sweet and gracious Aspect, in
green Mantles, girded about in the Middle,
and upon their Heads, Garlands of Honey-
Suckles, wild Roses, Thyme, &c. Their
Actions, dancing in a Ring, making Garlands
or gathering Flowers.

Nymphs, how
Painted.

Dryades, Nymphs of the Woods, not so fair
as the *Napæe*, of a brown or tawny Comple-
ction, Hair thick like Moss, and their Attires
of dark Green.

Naiades, Nymphs of the Floods, drawn
beautiful, with Arms and Legs naked, their
Hair clear as Chrystal; upon their Heads,
Garlands of Water-Cresses, with red Leaves;
their Actions, pouring out Water.

Of Painting.

Thetis, a Lady of a brown Complexion, her Hair scattered about her Shoulders, crowned with a Coronet of Periwinkle and Escallops, in a Mantle of Sea-Green, with Chains and Bracelets of Amber about her Neck and Arms, and a Branch of red Coral in her Hand.

Galatea, a beautiful young Virgin, with her Hair carelessly falling about her Shoulders, like Silver-Threads, and at each Ear a fair Pearl, viewing in her Hand a Sponge made of Sea Froth.

Iris, a Nymph with large Wings, extended like a Semi-Circle, the Plumes set in Rows of divers Colours, her Hair hanging before her Eyes, her Breasts like Clouds, drops of Water falling from her Body, and in her Hand *Iris* (the Rainbow) or a *Flower de Luce*. *Virgil* makes her the Messenger of *Juno*, where she is taken for the Air, when he saith, *Iris de Cælo misit Saturnia Juno*.

Nymphæ Dianæ, cloathed in white Linen, and their Garments girt about them, their Arms and Shoulders naked, Bows in their Hands and Arrows by their Sides.

Aurora, the Morning, a Virgin with Carnation Wings, and a yellow Mantle, in her Forehead a Star, and golden Sun-beams from the Crown of her Head, riding upon *Pegasus*, with a Viol of Dew in one Hand, and various Flowers in the other, which she scatters upon the Earth.

ARTS, VIRTUES, and PASSIONS, how Painted.

Arts, Virtues, and
Passions, how
Painted.

Arithmetick, in Cloth of Gold.

Geometry, Sallow-faced, a green Mantle fringed with Silver, and a Silver-Wand in her Right-Hand.

Astronomy,

Astronomy, with a Silver Crescent on her Forehead, an Azure Mantle, a Watchet Scarf with golden Stars.

Faith, in white Garments, with a Cup of Gold.

Hope, in Blue, with a Silver Anchor.

Charity, in yellow Robes, on her Head a Tyre of Gold, with Precious Stones, her Chair Ivory.

Religion, in a Silver-Veil with a Mantle of White.

Innocence, in White, wholly.

Wisdom, in white Robes, a blue Mantle feed-
ed with Stars.

Law, in Purple Robes feeded with Stars, a Mantle of Carnation, fringed with Gold.

Government, all in Armour.

Confidence, in a Party-coloured Garment.

Modesty, in Blue.

Felicity, in Purple, trim'd with Silver.

The Soul, in white Garments branched with Gold and Pearl, and crowned with a Garland of Roses.

Laughter, in several Colours.

Envy, in a discoloured green Garment full of Eyes.

The Months of the Year how represented.

January, all in White like Snow or Hoar-Frost, blowing his Fingers; in his Left Arm a Billet, and *Aquarius* standing by his Side.

The Months of
the Year, how
Represented.

February, in a Dark Sky Colour, carrying in his Right Hand *Pisces*.

March, Tawney, with a fierce Look, a Helmet on his Head, leaning upon a Spade; in his Right Hand *Aries*, in his Left Almond Blossoms and Scions, and on his Arms a Basket of Garden Seeds.

Of Painting.

April, like a young Man in *Green*, with a Garland of Myrtle and Haw-thorn Buds winged; in the one Hand Prim-roses and Violets, in the other *Taurus*.

May, with a lovely Aspect, in a Robe of White and Green, embroidered with Daffadils, Haw-thorn and Blue-Bottles; on his Head a Garland of White and Red Damask Roses; in one Hand a Lute, upon the Forefinger of the other a Nightingal.

June, in a Mantle of Dark Grass Green, upon his Head a Coronet of Bents, King-cobs and Maiden-hair; in his Left Hand an Angle, in his Right *Cancer*, and upon his Arm a Basket of Summer-Fruits.

July, in a Jacket of Light Yellow, eating Cherries; his Face and Bosom Sun-burnt, on his Head a Garland of Centory and Thyme, on his Shoulder a Scyth, with a Bottle at his Girdle, and by him a Lyon.

August, like a young Man of a fierce Look in a Flame coloured Robe; upon his Head a Garland of Wheat, on his Arm a Basket of Summer-Fruits, at his Belt a Sickle bearing a Virgin.

September, with a cheerful Look, in a Purple Robe; on his Head a Coronet of White and Purple Grapes, in his Left Hand a Handful of Oats, with a Cornucopia of Pomegranates and other Summer-Fruits, in his Right Hand a Balance.

October, in a Garment of the Colour of decaying Flowers and Leaves; upon his Head a Garland of Oak Leaves with the Acorns; in his Right Hand a Scorpion, in his Left a Basket of Servises, Medlars, Chesnuts, &c.

November, in a Robe of changeable Green and Black; on his Head a Garland of Olives with

with the Fruit; in his Right Hand *Sagittarius*, and in his Left Bunches of Turnips and Parsnips.

December, with a horrid Aspect, clad in an *Irish* Rug; upon his Head Three or Four Night Caps, and over them a *Turkish* Turbant, his Nose red, and Beard hung with Iceicles, at his Back a Bundle of Holly and Ivy, holding in Furred Mittins a Goat.

The Four Winds how expressed.

Eurus, the *East* Wind, a Youth with puffed and blown Cheeks (which all the other Winds have) Wings upon his Shoulders, his Body like a Tawney Moor, upon his Head a red Sun.

The Winds how Painted.

Zephyrus the *West* Wind. A Youth with a merry Look, holding in his Hand a Swan with Wings displayed and about to sing, on his Head a Garland of all sorts of Flowers.

Boreas the *North* Wind. An old Man with a horrid Look, his Hair and Beard covered with the Feet and Tail of a Serpent.

Auster, the *South* Wind. Drawn with Head and Wings seeming Wet, a Pot or Urn pouring forth Water, with which descend Frogs, Grasshoppers and such Creatures as are bred by Moisture.

Rivers how Painted.

Tyber, as it stands expressed in the *Vatican* at Rome, like a goodly *Statua* of Marble, lying along (as all Rivers are) and holding under his Right Arm a She Wolf, with Two little Infants sucking at her Teats, leaning upon an Urn or Pitcher, out of which issueth its Stream;

Rivers how Painted.

in his Left a Cornucopia of delicate Fruits, such as the Country affords (which is common also to all Rivers) and generally their City over their Heads) with a grave Countenance and long Beard, a Garland of Flowers upon his Head, and resting his Right Leg upon an Oar.

Nilus, in the *Vatican*, is expressed cut out in White Marble, with a Garland of sundry Fruits and Flowers, leaning with his Left Arm upon a Sphynx, from under its Body issueth its Stream, in his Left Arm a Cornucopia full of Fruits and Flowers on one side, and a Crocodile on the other side with 16 little Children smiling and pointing to the Flood.

Tygris, like an old Man (as the rest) and by his side a Tyger.

Ganges, with the Shape of a rude and barbarous Savage, with bending Brows of a fierce and cruel Countenance, crowned with Palm, having as other Floods his Pitcher, and by his side a Rhinoceros.

Indus, with a Grave and Jovial Aspect, with a Garland of its Country Flowers, by its side a Camel: It is represented pleasantly Grave, as an Emblem of the *Indian* Policy.

Thamisis, has sometimes been Painted like a Captain or Soldier lying along, holding a Sword in his Right Hand, and under his Arm the August Tower; in the other a Cornucopia of all Frangancies, with a Golden Chain which holds Four Crowns, and with this he encompassed the Streams from under which, bending of his Left Arm, they seemed to flow. His Temples were adorned with Bays. The River Empaled on one side with Anchors; and on the other *Cesar's Augusta*: Also Swans beside him.

The

The *Italians* have been most famous in the Famous Painters. Art of Painting; of whom the Chief were *Michael Angelo*, *Raphael Urbin*, *Giotto*, *Albert Durer*, *Shadan*, *Wierex*, *Crispin de Pas*, *Hans Holben*, who Painted the Banqueting-House, now a Chapel at *Whitehall*. *Johannes Cimabius*, *Andrea Taffi*, *Gaddo Gaddi*, *Stephano Florentino*, *Petro Laurati* of *Siena*, *Bonamico Buffalmaco*, *Ambrosio Lorenzetti* a *Spaniard*, *Petro Cavallino* of *Rome*, *Philipo Lippi* a *Florentine*, &c. and others hereafter mentioned.

The most esteemed Piece in the World for Famous Paintings. Judgment and Art, is the Battle (commonly called the Battle of *Doomesday*) fought in the Night between *Selym I.* Emperor of the *Turks*, and *Ismael Sophi* King of *Persia*. It was Painted by *Bellino*, and hangs in the Council Chamber at *Venice*. See in the Treatise of *MILITARY ART*, p. 237.

The rare Piece of *Michael Angelo's*, called, *The Day of Judgment*; a most extraordinary Thing, and still to be seen at *Rome*.

Another admirable Piece done by a *Blacksmith*, falling in Love with a *Painter's* Daughter who had vowed never to marry any but of her Father's Profession) he therefore left off his Trade and fell to Painting, Limning out this Piece; for which he got his loved Mistress, and was proffered 7000 Crowns for that one Piece. It is to be seen in *St. George's* or our *Lady's Church* in *Antwerp*.

Xeuxes and *Parrhasius*, Two Eminent Painters, contending both for Excellency; the First shewed Painted Grapes so like, that the Birds flew down to feed upon them: The other only shewed a Coverlet, which he Painted, and was so rarely done, that when *Xeuxes* went to put it aside (for *Parrhasius* told him his Piece

of Workmanship was standing behind that Curtain) and found his Error, he was forced to yield the Victory to the Latter; for whereas, he had only deceived the Birds, but *Farbasius* had deceived an Artist.

Pliny relates, that, in the Plays of *Claudius*, there was such excellent Painting, that the Crows have flown to the Representation of Tiles, mistaking them for the Tops of Houses.

The same *Pliny* relates, it had been found by Experience, that the Singing of Birds had been stunted by the Sight of a Painted Dragon.

Apelles drew a Horse so exact to the Life, that when *Alexander* seemed not to admire the Work, *Apelles* desired a Horse to be brought, which immediately fell a Neighing; wherefore he told *Alexander*, his Horse understood Painting better than himself.

This *Apelles*, also drew the famous *Venus*, having summoned all the Beauties of *Greece* to come and sit before him. He dying before the Piece was quite finished, no Man durst undertake to do it, as thinking he wanted Skill.

Giotto was a famous Painter; and Pope *Benedict* the XI. desiring to Beautifie *St. Peter's* Church, sent from *Rome* into *Tuscany* a Messenger, who coming and desiring a small Piece of his Skill to shew the Pope, *Giotto*, in a merry Disposition, takes a Sheet of Paper, lays it before him, and setting one Arm on his Side, with the other drew so absolute a Circle as no Compass could mend. This he gave for his Draught; but the Messenger desiring a better Specimen, he told him that was too much. The Pope seeing and considering it, sent for him, and both Honoured and Rewarded him. It grew at that time a Proverb in *Italy*, *More round*

round than Giotto's Circle. He wrought also for Pope *Clement V.* and was also sent for by *Robert*, King of *Naples*. Painting many fine Pieces.

Andreas Orgagna, drew the admirable Piece of, *The Day of Judgment*, wherein he put his Foes in Hell; and particularly one *Ceccho de Ascoli*, who was Painted so like, that all the Children and Boys discerned it to be the same Man.

Ascoli complained of this Affront to the Pope; and Money was offered *Orgagna*, to put him out, but he would not, saying, *There is no Redemption from Hell.*

Thomas Massaccio's St. Peter taking a Penny out of the Fish's Mouth, when he payed it for Toll, is famous.

A Picture of *Bularchus*, a Painter, was valued at its Weight in Gold.

Cæsar paid to *Timomachus* 80 Talents of Gold, about 14000*l.* Sterling, for the Pictures of *Ajax* and *Medea*.

The Custom of Painting a Pedlar with a Pack at his Back, in the Tavern Windows, &c. at *Sopham* in *Norfolk*; see in *DREAMS*.

See the Painted Rarities, mentioned in our Catalogue of Rarities, repositèd in *Gresham-College*

A U T H O R S.

Leon Baptista Alberti. Peacham's *Gentleman's Exercise.* Brown's *Art of Painting.* Salmon's *Polygraphice.* Dryden's *Art of Painting.* *The Lives of the Painters.*

of

Of COLOURS and DYEING.

COLOURS are nothing else but certain Alterations or Modifications that happen to the Light; or Colours are different Modes according to which Bodies receive the Beams of Light, and either drown them, or with great Variety reflect them to the Eye, as *Brasil* Wood communicates a Red Colour to the Water wherein it is boiled, which being put into a Glass with a little distilled Vinegar added to it, is immediately turned into Amber or Straw Colour; from which suddain Change there is reason to conclude that all Colours do arise from the various Texture of the Parts, and the different Reflection of the Light. Thus they call that a

Black.

Black Body which extinguisheth and choaks the Rays of Light, and therefore Black Bodies carry the Resemblance of Darknefs.

Blue.

Blue Colour, which approacheth to the Nature of Black, is that which reflects only a few Rays.

White.

A *White* Body is that which reflects the Rays to the Eyes in the same order it receives them. That is a

Red.

Red Body, which, in reflecting the Rays of Light, makes the Particles thereof to whirle strongly about their own Centers, as a Ball turns round by being struck against the Earth, or with the flanting Stroke of a Racquet. Those that constitute a

Yellow.

Yellow Colour are more slowly whirled about than those that make a Red. And those that make a

Green

Green flower than those that effect a Yellow Colour. So that Blue, Yellow, Green and Red, consist in their different Swiftnes or Slowness of their whirling about, exceeding that of their process or moving forwards: And the

Purple Colour is nothing but a Mixture of Blue with the Red Colour; which imparts its Brightness to the former. So the Light of Two Candles, One in a Lanthorn of Blue Glasse, the other in a Lanthorn of Red Glasse, uniting their Rays, reflect and constitute a Purple Colour: So that it may be concluded those are Black Bodies whose Surface is proper to extinguish and quash the Rays of Light; and that those are White whose Surface hath the Property to diminish the Light by reflecting it from all Sides, and with this Reason it is said, That Black and White are the Ground of all other Colours.

Green.

Purple. See in Animals and Inventions.

Black and White the Ground of all Colours.

All Colours are Light or Obscure; and they all (except Black) may be called Light as more or less partaking thereof. In White is most Light; and Shadow or Darknes least or none at all. In Blue is the contrary; most Shadow and less Light. In Yellow is inward Light and less Obscurity. In Purple is the contrary; inward Obscurity and less Light. In Green is Equality of Light and Darknes. In Light Red is more Light than Obscurity. So that for too much want of Obscurity cometh Whiteness; and for too much want of White or Lightness cometh Blackness: And a Cloath dyed Yellow, being put into the Blue Woaded Vessel, maketh an excellent Green.

There was Light and Darknes before the Planet of the Sun was created, albeit the Distinction between Day and Night is ascribed to the Sun. Now the Moon hath no Light but what

See Genesis Chap. 1.

Of a Rainbow in
the Night.

what the Sun doth impart unto her; and the Colours of the Rainbow, in the Day time, being produced by the Four Elements, do approve these Colours to be so in Nature: Whereof the Philosophers have given a Reason accordingly. See the Treatise of *METEORS*. But considering the Curiosity of them, and especially of *Aristotle*, it is strange (saith *Gerard Malynes*, in his *Lex Mercatoria*, p. 41.) that they have not made mention of the Colours of the Rainbow in the Night time when the Moon is at full and opposite to the Sun; which Colours nevertheless take a Reflection upon the Clouds, and Obscurity of the Night, far differing from the Colour of the Rainbow in the Day time upon the Declination of the Sun, inso-much that albeit all Colours must be discerned by Light, and so adjudged accordingly; yet their Operation doth differ very much. The Property of all Colours is to be subject to the Air and Sun, and all of them do vanish; but in the Black it is least seen, and is also the surest, having his Ground upon the Blue; so it be a Blue, substantial of Woad or *Indico*, which is the Extraction of the Herb *Glaustum* or *Anil*, in the *East* or *West Indies*, like unto our Green Woad; but the Leaves of it are round and not long: Howbeit the Climate and Ground make the main Difference.

There was about the Year 1630. two great Controversies at the Council Table. The one concerning the Dying of Black Silk, called *London Dye*; the other concerning *Logwood*, being a false glorious Colour. Wherein a great Abuse being proved, a Corporation of Silkmen were made, and Weight and Measure controul each other. Of which, see more in the Author before-named, p. 41.

The

The *Italians*, by weighing and measuring of their Silk Wares, say, A Yard of Satin truly made, weigheth Four Ounces; if it be above, they take the same to be over-gummed.

The Salts of Natural Bodies carry a powerful Stroke in the Tincture and Varnish of all Things, as is visible in the Art of Dying; where they advance and graduate their Colours with Salt. For the Decoction of Simples, which bear the visible Colours of Bodies decocted, are dead and evanid without the Commixion of Alom, Argol, and the like; and this is apparent in Chymical Preparations. So Cinabar becomes Red by the acide Exhalation of Sulphur, which otherwise presents a pure and niveous White. So Spirit of Salt, upon a Blue Paper, make an orient Red. So Tartar or Vitriol, upon an Infusion of Violets, affords a delightful Crimson. Thus it is wonderful what Variety of orient Greens the Spirits of Saltpeter will project, and especially if they be kept in a Glass while they pierce the Sides thereof. Perhaps, from the like Spirits in the Earth, the Plants thereof may acquire their Verdure. Thus Saltpeter, Armoniack and Mineral Spirits, emit delectable and various Colours; and common *Aqua Fortis*, will, in some Green and narrow mouth'd Glasses about the Verges thereof, send forth a deep Blue. See in the Treatise of *CHYMISTRY*, Vol. I. pag.

Whence the Colours of Plants, &c. may arise.

Make a small Table of *Bismuthum* (which some count Black Lead, Dr. *Jordan*, Tinglafs or the Steril Marchasite of Lead) and on the one Extream, place a Piece of Amber, on the other a Piece of Green Vitriol; the Vitriol will in a Moment lose its Colour and Acidity. Both which are familiarly observable in the Pre-

Preparation of Amber. See in the Treatise of
CHEMISTRY.

Ink how made.

Madders Root held
in the Hand will
dye the Urine
Red; Woad will
dye the Skin.

A thousand Changes may be made in the Colours of those Liquors, wherewith sharp and acid Salts are mixed. The transparent and clear Infusion of Galls, mixed with a Solution of Vitriol, makes Ink, to which, if you add Spirit of Vitriol or *Aqua Fortis*, the Black Ink will become like Spring Water; but if you drop some Oil of *Tartar* into that clear Liquid, it will be turned into Ink again. The Blue Tincture of Violets infused into the Oyl of Vitriol becomes of a Purple Colour, in which put some Drops of the Spirit of Hartshorn, and it will be changed into a Green. Oyl of Anniseed mixed with Oyl of Vitriol turns Red. Spirit of Turpentine poured upon Sugar of Lead or Calcined Lead, produceth a Red Tincture. Spirit of Nitre turns the Juice of Herbs as White as Milk, and Spirit of Wine turns Red if digested a while with Salt of *Tartar*.

Most Powders are White if dry, and beaten or ground small.

Spirit of Vitriol whitens the Teeth.

Colours in the
Peacock's Tail, how
caused.

The Cause of Variation of Colours in the Peacocks Tail, and the Necks of Doves, is by Solary Irradiations, and the different Reflection and Refraction of the Rays, made by thin Hairs of their Feathers, because of their various Admission of the Luminous Beams.

A sort of Wood
that communicates
various Colours to
Water.

Athanasius Kircherus, in his Book of the *Art of Light and Darknes*s, tells of a sort of Wood growing about *Mexico*, which the Inhabitants call *Coati*; which communicates great Variety of Colours to Water.

Blind Organist that
knew Colours by
the Touch.

Very famous and credible Persons give us Account of a certain Blind Organist, that lived near *Utrecht* upon the *Maes*, who had
such

such an Exactness of Feeling, that by the Touch of his Hand, he could distinguish several Colours.

It is found that Grains of *Indian Sand* beheld through a Microscope are not only pellucid or clear, but sparkle like Diamonds; but when by being heap'd together, they can no longer give free passage to the Light they shew opaque or dusky. I have by me some Sand of the Natural Colour, which is as Green as Grass, given me by Mr. *Laud Doyly* before his Death, which he told me came from the Shoar of the Kingdom of *Astracan*, in the *Mogul's* Empire.

Of the ART of DYING.

This Art was first found out (as some write) at *Tyre*, by the Accident of a Dog seizing on the Fish called *Conchilis* or *Purpura*; which stained the Dog's Mouth of that Colour. An Art it is of great Benefit and Profit to some, as well as of great Use to others.

In *Baker's Cave*, in *New England*, is found the Scarlet Muscle, whose Purple Vein being pricked with a Needle, yields Juice which gives a deep Purple dye not to be washed out.

To Dye Sanguine.

To dye Silk of a Sanguine Colour, the Dyers take a Pound of Green Weed, as much Alom, bruising them, and pouring on them fair Water. To this they add half a Pound of rasped *Brasil*, and set them over a gentle Fire to mix them well. Then they may put in the Silk, suffering it to Seeth therein, and so continue to strengthen the Dye, by dipping, till it hath taken the Colour perfectly. Then raise it with Lees, Woodashes, or Oak Bark; and so when it is cleared with fair Water, dye it and press it.

To Dye Carnation.

To dye Silk a deep Carnation. Take White Gall and Alom, the Herb called *Foli* well dried, about one Pound; to which put two Ounces of *Spanish*

Spanish Red, four of *Indian Lake*, and boil them in fair Water over a gentle Fire, and when they come to a height of Tincture, let the Silks have good Dippings three or four times.

To dye Rose Colour.

To dye Silk Rose-red. To every four Yards and Half you would have dyed, let them take a Pound and Half of Nutgals, and boil them in fair Water unbruised two Hours, shift the Water, then put in the Silk or Linen letting it soak four Hours, then wring it dry; and heat it in fair Water, wherein Alom hath been dissolved, then put in Half a Pound of *Brasil Powder*, and a Pound of Green Weed; and so by dipping in gentle Heats, the Colour will heighten.

To dye Purple.

To dye Purple. If it be Silk, to each Pound of it, take an Ounce of Alom, and a Gallon of Water, dissolving the Alom therein over a gentle Fire, then put in the Silk, and let it continue there about four Hours, then take *Lake* and *Indico*, each a Quarter of a Pound, a Quart of Urine, then adding a little Handful of *Cochineal*, heat them up into a Dye, and dip your Silk or fine Stuffs therein.

To dye Blue.

To dye a fair Blue. Let your White Silk, Stuff or Cloath be soak'd in Water, let it be wrung very well, and add two Pound of Woad, a Pound of *Indico*, and three Ounces of Alom; give a gentle Heat in fair Water, and so let them dip till you perceive the Colour take well.

Deep Black.

To give a deep Black. Take Half a Pound of Copperas, a Gallon of *Smith's Water*, two Pounds of Galls, burnt Ivory, Oak Bark, and Shooemakers Black, each an Ounce well ground, two Gallons of fair Water, mix them well, and set in the Sun, or other warm Place, a Month, often stir it, and at a moderate Warmth dip

dip the Velvet or what other things are designed for deep Blacks.

To dye Feathers of any Colour, you must take notice,

For Blue, let your Dye be *Indico*, and Bice.

For Black, Galls and Logwood, with a little Copperas.

For Purple, Lake and *Indico*.

For Carnation, Smalt and Vermillion.

For Yellow, Yellow Berries, and Saffron dissolving a little *Tartar* in the Water.

For Orange, Turmerick and Red Lead.

And this may suffice for a brief Inspection into the Art of dying Colours in Silks, Cloaths, Feathers, Bristles, &c.

Dying have wrote these

A U T H O R S.

Boyl of Colours. In *Lex Mercatoria*.

Of OPTICKS.

OPTICA gives us an account of various Appearances of Objects, by the means of Glasses.

Glass is made of fine Sand, and the Ashes of Chali or Fearn, the Ashes of which Herbs are most proper because they abound with abundance of fixt Salts, which are very porous and spungy; so that when these Ashes are put into a violent Fire, their Corners are consumed by it, and by these means the Surface of their Parts are made so smooth and even, that they touch in more Points than they did before, and afford

Original Ingredients in Glass.

See Sands mentioned in the Catalogue of Rarities in Gresham College. Rarities.

Of Malleable Glafs.
See p. 160.

a free Passage to the Beams of Light, and cannot be rendred dark or opaque without the Mixture of some forreign Matter. Glaffes are also made of the stuff called *Soda Bariglia* or *Massacote*; which stuff is certain Sea Weeds burnt, formerly to be seen in the Glafs-houfes. At *Smyrna* was a false Mirrour, which made beautiful Faces seem to be deformed, and ugly ones seem amiable; as saith *Pausanias*.

Glafs Windows were first brought from *France* into *Britany*, about *Anno 674*. at the Building of the Monastery of *St. Peter* by *Benedict* the Monk. *Cressy*, Lib. 18. cap. 11. See more in *INVENTIONS*.

Optica treats of the streight Ray; *Catoptricks* of the reflected; *Dioptricks* of the refracted or broken Ray.

Definitions.

These following Definitions belong to the Opticks.

Proper Objects.

The proper Objects of Sense, are those that can be known but by one Sense.

Common Objects.

The common Objects are such as may be known by more than one Sense; and consist of Bulk, Figure, Place, Situation, Distance, Continuity, &c.

Visual Rays.

The visual Rays are the streight Lines, by which the Frame of the visible Object is in a manner carried to the Eye.

Principles of Opticks.

The visible Object radicates from all its least Parts, to all the least Parts of the Medium, to which one may draw a straight Line.

That is to be seen, and that only; from which to the Eye the visual Ray may be extended.

The more Bodies there appear to be between the Eye and the Object, the more remote the Objects appear to be.

The

The convergent Rays are those, that departing from the Object come together. Such are the Rays of divers Parts of the Object, which cut one another in the Chrystalline Humour. The divergent Rays departing from the Object towards the Eye, recede from one another. The Rays of every point of the Object are divergent till they come to the Chrystalline Humour, beyond which they come together again towards the Retina.

Covergent Rays.

Divergent Rays.

No visible Object is seen at first altogether and perfectly.

Propositions in Opticks.

Magnitudes being in the same straight Line, the remoter seem to be the lesser.

Parallel Intervals seem to be nearer one another, the farther they are from the Eye.

Rectangle Magnitudes, being seen at a distance, seem to be round.

Equal Magnitudes being under the Eye, those that are furthest from the Eye, seem to be highest.

Catoptrick is derived from *Κατοπτρον* a Looking-Glass; because it treats of the Rays reflected by polished Bodies.

Catoptrick.

If a Ray falling upon a Glass make equal Angles, 'tis reflected into it self. 2d, Rays reflected from plain and convex Glasses, do neither come together, nor are equidistant. 3d, Heights and Depths seem to be overturned in convex Glasses. 4th, In convex Glasses, what is on the Left Hand appears to be on the Right; and what is on the Right Hand appears to be on the Left. 5th, If the Eye were in the Centre of a Concave Glass, it would see nothing but it self.

Propositions in Catoptricks

Dioptricks shews the apparent Changes of our Sight, and of visible Objects looked into through Prospective Glasses.

Dioptricks.

Its Chief Prin-
ciple.

When a Ray passeth through a Thin Middle into a Thicker, it breaks in the Superficies of the Thicker towards the Perpendicular Line; and when it passeth through a Thick Middle or Medium to a Thinner, it deviates from the Perpendicular Line, which this obvious experiment Demonstrates. Lay an Image or any other visible Object, in the Bottom of a Vessel, and then go back till it vanish out of your sight; now if you fill this Vessel with Water, it shall presently be visible again, because the Ray coming from your Eye, breaks downwards in the Superficies of the Water, as the same going straight up to the Superficies of the Water, deviates from the Perpendicular because of the Thinner Air towards the Eye, which renders the Object visible again.

It sheweth the Influence of Glasses applied one to another upon our Sight.

Perspective.

Perspective representeth every Object seen in some Diaphane or transparent Medium, through which the visual Rays are terminated or bounded on the Object, and generally what is seen through something, as through the Air, Water, Clouds, Glasse and the like, may be said to be seen in Perspective.

The Ray is a straight Line drawn from the Eye to the Glasse perpendicularly. That Point is called Primary, on which falls a Perpendicular Line drawn from the Eye to the Glasse. The Projection of a Line is not a crooked Line. The Object being a Point, there is but one visual Ray drawn from the Object to the Centre of the Eye; and this Ray is called the Axis, or Centrical, as being the most Vivid, and the Strongest of all. If the Object be a straight Line, the visual Rays make a Triangle. If the

the Object be a Surface, Plane or Spherical, the visual Rays represent a Pyramide.

Ichnography, is the Pourtraiture of the Platform or Plane upon which we would raise any thing. Ichnography.

Orthography, is the Pourtraiture of the Forepart of the Object. Orthography.

Scenography, represents the Object wholly Elevated and Perfect, with all its Dimensions and Umbrages on all sides. Scenography.

The Horizontal Line in Perspective, is taken from the Heighth of our Eye. This is the Chief Piece of the Picture, and which ought to be the Rule of the Dimensions and Heighth of the Figure.

The Point of Perspective or Sight, is made by the Centrical Ray above the Horizon.

Spectacles of Chrystal, cut with divers Angles Diamond-wise, do make a marvellous Multiplication of the Appearances; for looking towards a House it becomes as a Town; an armed Man seems a whole Company; caused solely by the Diversity of Refractions: For as many Plains as there are on the Outside of the Spectacles, so many times will the Object be multiplied in the Appearance, because of divers Images cast into the Eye. Again, there are Spectacles made which do diminish the Thing seen very much, and bring it to a fair Perspective Form, especially if one look upon a fair Garden-Plat, a great Walk, a great Court, &c. The Industry of the most exquisite Painter cannot excel in expressing the lively and exact Form which this Glass will represent. The Cause is from the Glasses of these Spectacles being Hollow and Thinner in the Middle than at the Edges, by which the Visual Angle is made lesser. If these Spectacles be placed

Spectacles of a curious Nature.

upon a Window, one may see those that pass to and fro in the Streets, without being seen of any; for their Property is to raise up the Objects that it looks upon.

The Tyrant Emperor *Domitian*, being fearful and suspicious of all Men, made the Walls of his Galleries where he used to Walk, to be set full of a kind of bright and clear Stone called *Phengites*, wherein he might see whatever was done behind or about him. Yet could it not secure him from the scarfed Arm; and being slain by his own Chamberlains.

Galileus's admirable Glass.

The common simple Perspective Glasses give only some help to an aged Eye; but *Galileus's* admirable Glass shews us, the spotted and shadowed opacous Bodies found about the Sun; The new Planets that accompany *Saturn* and *Jupiter*, or his Satellites: Also, in *Venus* is seen, the New, Full and Quartile Increase, as in the Moon, by her Separation from *Sol*. By this Instrument we can see an innumerable Number of Stars, as in the *Galaxy* or *Via Lactea*, which otherwise are obscured, by reason of the natural Weakness of our Sight. This Glass is of excellent Use in the Time of Eclipses, Comets shining and the like, and in discovering Ships at Sea, Armies, &c. for by this, the Objects which are farthest remote, and most obscure, are seen plainer than those which are near at hand.

To make a small Rainbow.

To make a Rainbow, take a Glass full of Water, and expose it to the Sun, so that the Rays that pass through, strike upon a shadowed Place; or take a Trigonal Glass or Chrystal Glass of divers Angles, and look through it, or let the Beams of the Sun pass through it, or with a Candle let the Appearances be received upon a shadowed Place, and you will have

have your content. See the *Rainbow* explained in the Treatise of *METEORS*, Vol. I. p. 426. and in this Vol. p. 444.

To blow up a Mine at a certain Hour of the Day, is only to place a Burning Glass, or Bowl of Chrystal over Powder or other combustible Matter, so that the Sun casting his Beams through the Glass will fire it off. Therefore is to be observed the Sun's Motion, and at what Hour the Sun's Rays fall direct thereon, before it be set; for thereby will you make your Time certain for its Execution.

For a Mine to blow up at a certain Hour.

Burning-Gl. fls. See in p. 161.

Maginus saith, To write Letters sufficiently large, but inverfed upon the Surface of Glass, with some kind of Colour (or Wax) placing the Glass to the Sun, the Letters which are written there will be reflected upon a Wall, &c. if in obscurity or shadowed, whereby a Friend may read your Mind at a distance. See p. 159, 164, and 338.

To reflect Letters on a Wall, &c. by means of the Sun.

To see in a Chamber that which is done in the Street without being seen. A Glass must be so disposed that the Line upon which the Images come on the Glass make the Angle of Incidence equal to that Angle of Reflection.

To see without being seen.

To see three or four Images from one and the same Candle. Present a Candle upon a plain Glass, and look slanting to it, so that the Candle and the Glass be near in a Right Line.

To see three or four Images from one Candle.

You may have a fine Experiment if you place Two Glasses together that they may make an Acute Angle, and so the Lesser the Angle is, the more Apparences you will see, the one Direct, the other Inverfed; the one Approaching, and the other Retiring.

To see an Image within a Glass without knowing from whence it came will give Astonishment; but 'tis only to place a Glass higher

To make an Image be seen without knowing whence it comes

than the Beholder, and right against it an Image, so it resteth not upon the Beholder, but casteth the Image reflection upwards. Then place another Object, so that it reflect or cast the Image downward to the Eye of the Spectator, without perceiving it being hid behind something; for then the Glass will represent a quite contrary Thing, either that which is before the Glass, or that which is about it, to wit, the other hidden Object.

A pleasant Glass.

If there were painted an Image upon a Glass, like a common Looking-Glass before it be covered with Quicksilver, and made up in a Frame, if set in an obscure Place, it will be sufficiently Pleasant, and give no small Astonishment whence the Cause proceeds of such Appearance.

To reflect an Image into a Chamber beneath, and cause Admiration.

Place a Glass near the Floor of a Chamber, and make a Hole through the Place under the Glass, so that those which are below may not perceive it, and dispose a bright Image under the Hole, so that it may cast its Species upon the Glass, and it will cause Admiration to those which are below, and know not the Cause. The same may be done by placing the Image in a Chamber adjoyning, and so make it to be seen upon the Side of the Wall.

To represent in a Chamber all that is to be seen, or is done without.

To represent to you in a Chamber that which is without, and all which passeth by. Chuse a Chamber towards the Street, frequented with People, or else against some fair flourishing Object that will be delightful to you, then make the Room dark (by shutting out the Light) except a small Hole of Sixpence broad, then will you see all Objects upon the Wall, or better upon a White Sheet of Paper or White Cloth hung near the Hole; and if unto the Hole you place a round or convex Glass, which
is

is thicker in the Middle than at the Edge (such as is the common Burning-Glasses) the Images will all appear upon the Paper or Cloth according to their Natural Colours. But *Note*, All Objects will appear inversed (because the Species do Intersect one another in the Hole, so that the Species of the Feet ascend, and those of the Head descend) to represent them therefore in their right order, is by disposing another Convex Glass between the Paper and the Glass. This Experiment is of great Use for *Painters*, who would take the Scutch or small Topographical Description of fine Seats of Pleasure, a fine Park at distance, &c. all being in due Proportion; and they may trace the Reflection upon the Paper, whereby they have their Land-ship, Prospect, &c. with small Trouble and great Exactness. Of Glass Dyals, see in *pag. 165.*

Of the *Weather-Glass*, see *Air* in our Treatise of *ELEMENTS*. A Glass Sphere, see in *GEOMETRY*, *p. 158.*

By means of a Convex Glass, and a Lighted Torch placed in the Point of Concourse or Inflammation (which is near the fourth Part of the Diameter) the Light will be reverberated into the Glass, and will be cast back again very far by parallel Lines, making so great a Light that one may see into the Camp of an Enemy, or read the Letter of a Friend (if writ in very large black Characters) at a distance, or an Epitaph placed high and shelving, &c.

To see into the Camp of an Enemy, &c.

To see how a long Wig or other Thing fits behind us. Take but a Glass in your Hand, and whilst you hold that before your Face, turn your Back to the great Hanging Glass, and you may see quite behind how every thing is behind you.

To see how a Wig or other Thing fits upon us behind.

See

See the Rareties in Painting, mentioned in our Catalogue of Rareties, repositied in *Gresham Colledge*. Rareties.

Of *Opticks*, have wrote these following

AUTHORS,

Euclid, Aquilonius, Scheiner, Vitellio, Herigone, Aristotle, Hipparchus, Galen, Plato, Porphyrius. See *Alhazen of Opticks, Henry Van Etten's Mathematical Recreations, Discourse of Convex Glasses.*

Of ANGLING.

THIS Art was in great Esteem among the Ancient Romans, (tho' Fish were always rejected in sacrificing to their Deities) in so much they were wont to stock the *Italian Sea* with Fish, some whereof were unknown to those Coasts before, being brought thither in Ships from very remote Parts; nor did they spare great Expences to make Fish-Ponds, and Store-Waters for the choicest sort of Fish; the Roman Emperors themselves taking great Delight in Angling, especially *Octavianus Augustus*, and *Nero*; which last (saith *Suetonius*) fished with a Net wrought with Purple and Scarlet Silk; and *Cicero* called *Lucius, Philip*, and *Hortensius* Fishmongers, because they took great Delight in Fishing, and from thence some Roman Princes derived their Surnames, as particularly the *Licinij, Murenæ, Serij*, and *Oratæ*.

The Learned have observed, that of the Beasts of the Earth, there are scarce 120
several

several Kinds, and not many more of the Fowls of the Air; but no Man can reckon the several Kinds of Fish and Creatures of the Sea.

Fish may be taken either with a *Hook*, *Nets*, *Weels*, *Nooses*, *Fackspears*, or *Darts*; and *Angling* is either at the top of the Water, with a *Fly*, or at the bottom with *Worms* and other *Baits*. With a *Fly*, or otherwise the *Hasel-Rod*, is to be chose before the *Cane*, whose *Joints* doth sometimes fail, and deceive the *Angler*, in striking at his *Bait*. The *Three Hair Line*, (if the *Hairs* be taken from a good Horse that is strong and fleshy) is sufficient for small *Fish*, but for the greater sort, we use *Lines* of six or eight *Hairs*. The *Floats* are of divers kinds; but the *Float* made of two *Swan's Quills* one in the other, so it take no Water, or *Bustard's Quills*, are esteemed the Neatest. The *Hooks* are to be fit to the size of your *Fish* you would catch, small for the small *Fish*, great for the bigger *Fish*.

The *Baits* for *Fish* may be distinguished into three kinds, the *Live Baits*, the *Dead Baits*, and the *Artificial Baits*.

Live Baits are *Worms* of all kind, of which the *Red Worm* is the best; the *Maggot* (or *Gentle*) the *Bobb*, the *Doare*, *Brown Flies*, *Frogs*, *Grashoppers*, *Hornet*, *Wasps*, *Bees*, *Snails*, small *Roaches*, *Bleaks*, *Gudgeons*, or *Loches*, *Mynnows*, &c. These Things must not be kept all together, but every Kind by it self, and feed them with such Things they delighted in when they had their Liberty; the *Red Worm* is best preserved in a Bag of Red Woollen Cloth, and put therein *Ground Moss* or *Fennel* cut small, in which they will scour themselves; but if you mix *Earth* that is black and fat, or
Neats

The Rod.

Line.

Floats.

Hooks.

Baits.

Live Baits.

Neats Dung therein, they will live the longer. The *Moggots*, or *Gentles*, feed with *Sheep-Suet*, or *Livers* of any Beasts, shread small; but to scour or clean them, let them have *Sand*, *Loam*, or *Bran*, and keep them warm they will live the longer. For *Frogs* and *Grashoppers*, wet *Moss* is best to keep them in; and when you *Angle* with a *Frog*, cut off their Legs at the Knees, and the *Grashopper's* Wings near the Body. For the *Bobb*, *Cadisworm*, *Canker*, and other *Worms*, you may keep them with the same Things you take them with.

Dead Baits.

Dead Baits are *Pasts* of all kind, young Broods of *Wasps* dried or undried, the clotted *Blood* of *Sheep*, *Cheese*, *Brambleberries*, *Corn*, *Seeds*, *Cherries*, and such like.

Artificial Baits.

Artificial Baits are your made *Pasts*, *Flies* of all sorts and shapes, (made of *Silk* and *Feathers* about the *Hooks*) fitting the several Seasons and Times of the Year, which being moved in the Water, the *Fish* greedily snatch at, and are taken with the *Hook*. 1. For the *Pasts* there are divers kinds, but to make a durable *Paste*, take *Bean-flower*, and those parts of a *Coney's* Legs called the *Almonds*, or of a young *Whelp* or *Cat*, is as good, and put a like Quantity of *Virgin's Wax* and *Sheep-Suet*, and beat them together in a *Mortar* 'till they become one *Mass*, then with a little *Clarify'd Honey*, temper them before the *Fire*, and make them into *Balls*. Some use the purest white *Bread* they can get, and make it into *Paste* to fish at the *Hook*; for the courser *Baits* are used only to throw into the Water just where you fish, thereby to intice the *Fish* together in that Place. 2. For the making of *Flies*, the best way is to take the *Natural Fly*, and make one so like it as possible, for which reason

for you must observe what *Flies* haunt the Waters for Seasons of the Year. These resembling *Flies*, may be made with Cotton, Wooll, Silk, or Feathers.

For the Seasons of the Year in which we may use these *Baits*, Note, The *Red Worm* will serve for small *Fish* all the Year, and *Snails* will serve the *Pike* and *Trout* in any Season.

The Seasons of the Year for these Baits.

In *March* use *Frogs*, and for the *Trout* the *Dun Fly*.

In *April*, *Sheeps Blood* and *Cheese*, and the *Stone Fly*.

In *May*, the *Bobbe* and *Dorre*, dried *Wasps*, *Red* and *Yellow Flies*, and *Pasts*.

In *June*, *Brown Flies*, the *Black* and *Moorish Fly*, and *Pasts*.

In *July*, the *Maggot* or *Gentle*, *Hornets*, *Wasps* and *Bees*, the *Shell-Fly*, and all *Pasts*.

In *August*, *Snails* for the *Roch*, *Bleak*, *Gudgeon* and *Minnow*; the *Cloudy Fly* is good this Month.

In *September* and the Fall of the Leaf, *Grasshoppers*, *Brambleberries*, *Corn*, and *Seeds*.

Now to know what *Fish* delight in these *Baits*, Note,

The *Gudgeon*, *Roch* and *Dace*, are *Fish* of eager Bite, and therefore soonest deceived, and will feed at the *Red Worm*, *Gentle*, or *Pasts*. The *Eel* and *Flounder* are greedy *Fish* also, and Bite at the *Red Worm*; as also doth the *Perch*, which swims about the midst of the Water.

The *Tench* is a *Fish* that lurketh always at the bottom, where the *Ouze* or *Mud* is thickest, and is to be caught with the great *Red Worm*, and sweet *Pasts*, the browner the better, being mix'd with *Sheeps Blood*; but 'tis best Angling for him in the height of Summer, for at all other Times he bites sparingly. The *Bream* delights

Baits for Gudgeon, Roch, Dace, Eel, Flounder, Perch, Tench, Bream, Chevin, Trout, Carp, Salmon, Schad, Herring.

delights in all sorts of *Worms*, *Butterflies*, and *Greenflies*, *Paste* of all the Crums of white *Bread* and the Brood of *Wasps*; the best Season to catch this *Fish* is from the first of *March* 'till the last of *August*. The *Chevin* and *Trout* are sometimes taken at the top of the Water with *Flies*, *Snails*, and *Grashoppers*, at other times at the bottom with the great *Red Worm*. The *Carp* is a dainty *Fish* to bite, and strong must be the *Line* that takes him. He is to be inticed by Baiting the Ground with coarse *Paste*, and the time of Angling for it, is early in the Morning, or else in the Evening, for then is its time of feeding. He seldom refuseth the *Red Worm* in *March*, the *Cadis* in *June*, or the *Grashopper* in *July*, *August*, and *September*. The *Salmon* is a noble *Fish*, and is to be taken with the Net, in Rivers running from the Sea, which in the Spring-time he often abandons, to seek after fresh Waters. The *Schad* is a *Fish* good to be eaten, and like the *Salmon* in Spring-time seeks after the sweet Water, which he loves, but at the first Noise of Thunder he swims away again into his first Abode. The *Herring* is a Sea *Fish*, the proper Nature whereof is to swim in such vast Shoals together, the *Fishermen* dare not throw in their Nets 'till the Glut of them are past, and then catch the Straglers. And here it may not be improper to Note, That there are a sort of *Huers*, or *Balkers*, called also *Conders*, i. e. to Conduct or Lead, which be such as stand upon high Places near the Sea-Coast at the Time of *Herring-Fishing*, to make Signs with Boughs, &c. in their Hands unto the *Fishers*, which way the Shoal of *Herrings* passeth; for that they standing on a high Balk (whence the Name of *Balkers*) or Ridge of Land,

What Fish are most
wholsome to eat.
See in the Treatise
of Cookery and Dyet,
at the End of the
1. Vol.

See Hue and Cry,
Vol. 1. p. 368.

Land, can better discern (by a kind of blueish Colour the *Fish* make in the Water) where they are, than those that be in the Ships. They are called *Huers*, probably from the *French*, *Huer*, to Hoot and Shout, whence comes our *English* Hue and Cry. But to return, the *Crab*, the *Oyster*, the *Lamprey*, the *Sturgeon*, come in amongst many others of the Sea *Fish*, tho' the *Lamprey* and *Sturgeon* seek out the sweet Waters. And Note, The *Angler* and *Fisherman* must observe to choose proper Times for their purpose of catching *Fish*; for the violent Heat of the Day, high Winds, great Rain, Snow, Hail, Thunder, Lightning, Eastern Winds, Land-Floods, thick Waters, and Leaves falling into the Water, or such like Disturbances, will frustrate their Designs; nor is a Wet or Cold Season of less Danger to the Health of the *Angler*, who therefore at most Times ought to avoid lying on the Ground while he *Angles*, or sitting too much on a Bank, to numb his Joints, and impair his Body by Colds, or otherwise.

And now under this Head it cannot be improper (at least to the intended Design of this Book, which would omit nothing worth our Remark, or fit for our Information) to speak somewhat of

Whale-Fishing, which is a very beneficial Trade, of great Advantage to this Nation, and hath been continued ever since the happy Discovery of *Greenland*, about 1580, where that Trade is carried on at this day. The ordinary length of this Creature is about 60 Foot, his Body round, 14 or 16 Foot thick, and his Head is the third part of him; his Mouth 14 Foot wide, and the Whale-bones, or Fins, are no other than the rough and inward part of the Mouth,

We read that the *Fish* called *Scolopendra*, will cast forth its Bowels to clear them of the Hook.

Of the *Fish* *Torpedo*, &c. See the *Treatise of Animals*, p. 7.

Whale Fishing.

The Whale.

Whale-Bone.

Sperma Cæti and
Oyl.

Mouth, of which he hath 500, which close in the shutting thereof like the Fingers of both Hands within each other; he hath a Trunk, or Breathing-hole in his Head, but hath no Teeth, but a monstrous great deformed Tongue, being about 8 Tun in Weight; his Brains (or rather the Oyl boiled out of his Head) is said to be the *Sperma Cæti*, and there hath been made 27 Tun of Oyl out of one *Whale*. In the 17th Year of Queen *Elizabeth's* Reign, a great *Whale* was cast upon the Isle of *Thanet* in *Kent*, 20 Ells long, and 13 Foot broad from the Belly to the Back-bone, and 11 Foot between the Eyes; one of his Eyes being taken out of his Head, was more than a Cart with 6 Horses could draw. In King *James* the First's Reign, another *Whale* came up within 8 Miles of *London*, whose Body was seen divers times above Water, and judged to exceed the length of the largest Ship in the River.

The manner of
taking *Whales*.

The manner of taking *Whales* is thus, this monstrous Creature is often forced to swim up to the top of the Water to get Breath, (as is supposed) which when the Mariners spy, they take the Shallop and row presently towards him, wherein the *Harponier* stands ready to dart his Harping-Iron with both his Hands; to which is fastened a Line of such length, that the *Whale* finding himself wounded, and sinking down very low, may carry it down with him, it being contrived the Shallop shall incur no danger thereby. When the *Whale* rises up again, they strike him again with Launces about 12 Foot long, the Iron being 8 thereof, and the Blade 18 Inches, the Harping-Iron being chiefly intended only to fasten and hold him to the Shallop, while the Creature casting up vast Quantities of Water and Blood, that
reddens

reddens all the Sea about it, expires. Being dead, they tow him to the Ship with two or three Shallops joined together; and then floating at the Stern of the Ship, they cut the Blubber, or Fat, from the Flesh, in pieces three or four Foot long, which are cut smaller ashoar and boiled in Coppers; which done, they take them out, and put them into Wicker-Baskets, which are set in Shallops half full of Water, into which the Oyl runneth, and is thence put into Buts.

The *Pearl-Fishery* is a valuable Commodity, Of Pearl-Fishery. obtained in Waters in *Peru*, and those Parts of *America*, there being several Divers who Of Divers under Water. See in p. 353. are able to stay under Water a very considerable Time, (some write above half an Hour) who after they have dived, bring up a *Fish* much like an *Oyster*, which having opened, they take out the Pearl, or Pearls therein; these Pearls are supposed to be engendred therein, by the falling of Dew, when the *Fish* open their Shells to receive the Air upon the Shoar. Of their Names and Value, see in *Lex Mercatoria*, p. 58. See the Geographers and the Travels of those that have been in those Parts. See in *GEMS*, p. 27.

Pearls of all sorts are most found in the *West-Indies*, which are Occidental, and yet bear the Name of Oriental Pearls, which come from the *East-Indies*; and altho' they have more Lustre, they are of a brownish Colour, and somewhat inclining to the yellow, and therefore of less Estimation or Price. If Pearls yellow accidentally, they may be made fair by the means following; take two Ounces of white *Argal*, or *Tartar*, and one Ounce of *Mercury Sublimate*, also half an Ounce of *Alom*; put them together into a clean Pipkin,

H h

or

or leaded Pot, pour upon it the best *Aqua Vita*, and bind your Pearls in a clean Clout, and hang them in the Pot, and so let them stand over the Fire one Hour, not touching any part of the Pot, and they will be fair and white. Of the Scaling of Pearls I shall speak presently. Pearls will melt away in the Fire, like Butter or Wax, which an Acquaintance of mine accidentally experienced, by unhappily letting a Pearl fall into the Fire.

The Isle of *Baharem* (upon the Coast of *Arabia*) belonging to *Persia*, is renowned for *Pearl-Fishery*, there being the clearest, biggest, and roundest, which are to be found in all the *Levant*.

The *Muscovites* go often to the River *Songono* in *Tartary*, to fish for Pearls. *Teste*, Father *Verbeist*, who published the Emperor of *China's* Voyage into the Eastern *Tartary*, made Anno 1682.

The Coast of *Manar*, joining to *Malabar* in *India intra Gangem*, is renowned also for *Pearl-Fishery*, where they fish for them in *April* three Weeks together. *Morden's Geography*.

At *Cape Comryn* (an eminent *Pearl-Fishery*) was found a Pearl weighed above 30 *Quintals*.

At *Japan* are taken very large Pearls, but inclining to red Colour.

Great round Pearls may be scaled, for naturally the Pearl is like unto an Onion, scaling one upon another; *Malynes*, in his *Lex Mercatoria*, p. 59. tells of a Friend of his named *Monfieur Hellman*, who in the Minority of *Philip III.* King of *Spain*, shewed unto that Prince two excellent great round Pearls, which he valued at 10000 *Ducats*, or 3000 *Pounds*; the young Prince took them in his Hands, saying,

ing, *Bocado por un Roy*, (a Morfel for a King) and swallowed them down one after another. *Hellman* the Merchant made account to receive Money for his Pearls, but could not, but was glad within two days after to take his Pearls again, which by the Heat of the Stomach were become yellow; coming to *Antwerp*, a certain *Jew* undertook to take off the upper Scale, and so they were exceeding fair again, but diminished; they were afterwards sold to the Great *Turk* for above 2000 Pounds Sterling.

The Pearl which Queen *Cleopatra* dissolved in Vinegar, and drank off at a Draught to her beloved *Anthony*, is famous, and was worth 1600 Crowns. She had the fellow in the other Ear, but *Anthony* not letting her do the same by that, she had it cut in two, and wore them in her Ears.

He who desires to read more at large of this Art of Angling, let him peruse, among others, the following

A U T H O R S,

J. S. Gent. his *True Art of Angling*, *Smith's* *Royal Fishing*.

OF FOWLING.

See the late Act
of Parliament, 9
Anne Reg. for the
Preservation of the
Game.

FOWLING is not only good for the Exercise of the Body, but also very Diverting and Recreative, affording besides Pleasure, many dainty Bits for the Palate, being a Sport much in request among Gentlemen, and the better sort; nor hath it been less esteem'd by Princes themselves, *Henry the Eleventh*, Emperor of *Germany*, gaining the Name of *Auceps* from his great Love to this Pastime.

The several Ways of taking Fowl, is by Nets, Lime-twigs, or Shooting with Small-shot. Fowl are distinguished into,

Land-Fowl.

1. Land-Fowl, which are not so shy as Water-Fowl, seeing Men oftner, yet are they cunning enough to avoid Danger. Those that are properly termed Land-Fowl, and worth taking, are found in Woods, Coppices, Heaths, Fields, &c. where they have their several Haunts, according to their Nature, or the Season of the Year; and they are principally *Pheasants*, *Partridges*, *Railes*, *Quails*, *Pouts*, *Heath-Cocks*, *Wood-Pidgeons*, *Black-Birds*, *Feld-Fares*, *Stares*, *Thrushes*, *Larks*, *Puffins*, *Wheat-ears*, &c. and those sorts that gather in Flights may be taken in the day-time with Nets, &c.

Note well the Act
above, and the
Penalties thereof.

Water-Fowl.

2. Water-Fowl are the most watchful, and frequent small Streams in the Night, retiring in the day-time to some Place where they may securely rest; these Water-Fowl are properly Web-footed, though there are another sort, as the *Bittern*, *Heron*, &c. that much frequent marshy Places. But though these particularly delight in Fish, yet they swim not as doth the

Wild-

Wild-Goose, Duck, Widgeon, Moor-Hen, &c. who delight in Rivers, and large deep Waters.

To take Land-Fowl with Nets, you must first consider what Food they most delight in, for it will be proper to bait the Place, as well as to decoy them into the compass of your Net, with a Bird, or Stale of the same kind with those you lay in for. The Mashes of the Nets must be proportionable to the Fowl that it is not big enough for them to escape, nor so little that there will be difficulty in their intangling. Let the Net be about three Fathom in length, and one in depth, verged on either side with a sufficient Cord, and these Nets must be of very exact size. The best Time for this Sport is from *August* to *November*, tho' in an open Winter it may be indifferently used 'till the middle of *February*, that the Birds begin to Couple. In this Sport you must be an early Riser, and have your Nets placed before the Sun is up, and the Birds come abroad from their Night's Roosting. The most proper Places are on short Barley-Stubble, green Leys, or even Meadows that are dry, &c. far from Villages, or any Resort of People; for if it be uneven Ground, the Nets will not close so well, but that the Birds may flicken, or creep thro' and get away. To allure the Birds where your Nets are, you must use a Stale, as a live Lark, or other suitable Bird, which may be placed at some distance from you to a Stick, thro' which a String comes, which you may pull, to make the Bird appear as if flying about to feed; and let there be some Seeds, Corn, or Chaff scattered, to which when the Birds draw near, you need not always stay for their lighting on the Ground, but draw up smartly, and the Nets will take them in. If

Living Stales

you want living Stales, you may shoot a Lark, &c. take out the Intrails, and stuff him with Tow, and dry him in an Oven, his Wings set in a flying Posture, and so you may be furnished at all times. As for Implements to be used on this occasion, you must not go Abroad without them, viz. Spare-Poles, Lines, and Stakes, Pack-Thread of different kinds, a Knitting-Needle and Pin, Hatchet to sharpen your Sticks, Mallet to drive them in, a Bag for your Stales and other Birds, with a dark Cage at the end of it.

If your Net be for the small sort of Singing-Birds, as *Linnetts*, *Chafinch*, *Green-Bird*, *Goldfinch*, &c. have such Birds for your Stales as have been brought up to sing in Cages on the outsides of the Fall of your Nets, who then being refreshed will sing, and draw others of their kind to them.

To catch the Lapwing.

As for the *Lapwing* she is exceeding shy, and tho' she may play and dodge about your Nets is not easily caught; therefore place several dried *Lapwings*, or their Skins stuffed, and set out as if they were Pecking, and at the Head of them let there be two live Stales; give them Meat that they may be Eating or Pecking, and to intice you must have the perfect *Lapwing* Call, and then as soon as ever they swoop within the danger of your Nets, draw suddainly your Strings that shut your Nets, for if they discover the Deceit, they will hardly come any more.

To allure Stares, or Starlings.

To allure Stares to you, you must set live Stales in your Net and in Cages, but feed them not, and when they are hungry they will Cry, which will draw such as are within hearing to their Succour.

The

The Net which the *Italians* call *Pantierre*, being much larger, and the Clap-Net for *Sparrows*, tho' different in their Make, are yet of the same use with the former; the first being used for *Pheasants* and larger Fowl, and the latter for *Sparrows* and such small Birds. Of the Clap-Net see hereafter.

For Water-Fowl, observe the Feeding-Places and Morning-Haunts of such Fowl; place your Nets about two Hours before their usual time of coming, then at about two or three Fathom beyond the Net, in a direct Line from the Stakes, fasten one end of the Cord that the upper part of the Net is extended to, or upon, whilst the other end you hold in your Hand, being about ten or twelve Fathom long, that when the Game approaches within the compass of your Net, on a sudden pull, you may easily cast it over 'em. The Net must be flat on the Ground; and the better to prevent its being discerned, cover it lightly over with short Grass or Sedge, then make a Hiding-Place for your self of Fern, Reeds, Flags, or such as the Place affords, that the Fowl seeing such like Things, may approach the bolder. As for your Stale, if you have any that is a tame one, or one artificially made of the kind you mostly Net for, it is most proper to place it within the Verge of the Net for the better increase of your Sport; and this you may continue 'till the Sun is risen about an Hour, or a little longer, but not much, for then their Feeding in those Places is over 'till a little before Sun-set again. If your Net be very large, you cannot conveniently have a Pair of Draw-Nets, unless some Body help you, for one will be as much as you can manage, and con-

For to catch Water-Fowl with Nets.

veniently throw over the Fowl; but for the smaller sort, a Pair of Draw-Nets may be proper enough.

Folding Day-Nets
for small Water-
Fowl.

In Netting, for the smaller sort of Water-Fowl, they must be in length proportionable to the breadth of the Water you Net in, and about two Foot and a half deep: This may be of smaller Masches than the former Nets, and the Packthread somewhat less, that neither the Fowl can get thro' the Squares, nor break its way; and Line this Net on either side with false Nets, whose Masches may be 18 Inches square, so that the Fowl striking, and passing thro' the first Net, may be intangled between both. This Net must be staked athwart the Water, and the bottom plummed so that it may sink about six Inches under Water, and the upper part, by straining, be slantwise against the Current, (where there is any Current) and about two Foot above the Water; and fasten the String that guides the upper part of the Net to a small yielding Twig, the better for its giving way when the Fowl strikes against the Net, so that they may the more entangle. You may place several of these Nets at a convenient distance, and thereby cannot miss of Game.

The Clap-Net.

The Clap-Net is made up of two cross Staves, a Press-Net, and two Strings that may easily draw it together when the *Sparrows* are in it. This Net is properly used late in the Evening, or early in the Morning, by clapping it to the Eaves of Houses, Barns, &c. and in Autumn against Vines growing on Walls of Houses; and when it is set to any Place, knock and thrust the cross Staves against it, and at the Noise the Birds that Roost there will

will come out, flying into the Net, which you may draw up like a Purse, and thus may you take great Numbers.

The Crown-Net may be made like that for Cloven-footed Water-Fowl. See before in the Margent, where you find Folding Day-Nets for small Water-Fowl. This may be placed any where, as near a Barn-Door, (and then hide it with short and light Straw) in Corn-fields, (then with the Breakings of short Stubble) if in Grass-fields, then hide it with Grass. And place your self secretly, that when the Fowl descend and swoop, you must draw up with a swift Hand. One of these Nets may be set at a Barn-Door, where there is not room to play them, in the Nature of a Pitfall, gently held up by a Stick, with a String to it run through a Crevis; when they are under it, draw the String, which pulling away the Stick will suddenly let it fall on them. To hasten the Fall, hang some Weight on the Cord that Verges it.

The Crown-Net.

Have Nets in the form of a Scoop, or Hoop-Net, such as Anglers on Land, fish sometimes withal, made of fine green Thread, or a small Trammel-Net will do better. Then carry a Hobby, or Lark-Hawk, on a Pole into the Field, where the Larks haunt about Harvest-Time, beat them up with a Dog, and observing where the Flock alights, creep as close to them as may be, then on a sudden advance your Hawk on the Pole, and as soon as they perceive it, they will be so Coward, that by drawing your Net over them, without their so much as stirring, you may take them.

To dare and take Larks in the Day-time.

Birds of Prey are to be taken chiefly with Baits and Trap-Cages, of which sort is the Heron, which is a great destroyer of Fish-Ponds;

To take Fowl with Baits and Trap-Cages.

Ponds; therefore first find the Water she haunts, then get three or four small *Dace* or *Roch*, and draw a smooth Wyre just within side their Skins, beginning on the outside of their Gills, run it to the Tail; fasten it to a Line strong twisted with Wyre and green Silk, three or four Yards; Stake the end of the Line in the Ground, that the Fish may play in the Shallow where the *Heron* may wade; and arm the end of the Wyre with a convenient large Fish-Hook, and when the *Heron* stalks into the Water for her Prey, she will greedily swallow the Fish, if alive, or else not, and so be taken with the Hook; but if the Line be only Silk, she will with her sharp Bill bite it asunder and escape.

To take Wild-Ducks, Buzzards, Kites, &c.

Thus *Wild-Ducks* are taken, baited with Worms, Lights, or the like. *Ravens*, *Buzzards*, *Kites*, and divers other Fowl, with *Nux Vomica*, dissolved in Lees of Wine, and made up into little Pellets, scattered, or rowled up in Carrion, or such like Things as they take; for flying up after, it suddenly works and stupifies them so, that they fall down again, and may be taken up, but if they lie long they will recover and fly away. Such Grain as Birds feed on, steeped or boiled in Spirits of Wine will have the same effect on them, if you watch them when they fall and take them quickly.

As for *Linnets*, *Robins*, *Goldfinches*, *Nightingales*, and such choice singing Birds, you may take them in Trap-Cages, placed in their Haunts, and baited with Seeds, Worms bred on Herbs, Ants Eggs, Flies, or the like. These Cages may be bought ready made at easy Rates.

There

There is another way to take Fowl by a glewy Substance, called *Bird-Lime*. To make which take these Directions.

To make Bird-Lime for Land and Water-Fowl, and how to keep it from Freezing.

About *Midsummer*, or when the Sap is full, bark well grown Holly, and having strip'd off a considerable Quantity, put it into a Kettle, and boil it in fair Water 'till the white and gray Bark part and rise from the green; then take the green and lay it in a Heap on tiled or stone Floors in a moist place, either in a low Vault or Cellar; cover it over with Weeds and let it putrefy, which in about a Fortnight it will do, turning into a slimy Matter; it will be convenient in this case to lay a Layer of Fern between each Layer of the Bark, and when this is done beat it in a Mortar 'till nothing but slime remain, so that it may be wrought like Wax, no part of the Bark being to be discerned, then in a running Stream wash it so well that no Mote or Husks of any thing remain. After this, knead it into a glazed earthen Vessel, with a Cover so close, that the Air cannot come at it, and there it will purge and fume up its Scurf, which when it has done, in five or six days scum it off, still doing so, 'till no more arise, then shift it into another clean Vessel, and keep it for your use.

When you use it, put a third part of Hog's Grease, Goose-Grease, or any thin Grease into it, and stir it over a gentle Fire in an earthen Vessel 'till well incorporated, then take it off, and continue stirring 'till it become cold.

This done, take your Rods, or what you intend to anoint with it, warm them at the Fire, and anoint them over with it twice or thrice, so that it may lie of an equal evenness, and not in Clots, often warming the Rods

To anoint Rods with Bird-Lime.

Rods to make it spread, and be the less perceived by the Fowl. In liming Straws for small Birds you may do them the same way, but many together, turning and opening them before the Fire 'till they are well smeared. In cold frosty Weather mix it with Oyl of *Petroleum*, or *Spike*, to prevent Freezing. To make it useful in the Water, put to it when you work it with Grease, sharp Vinegar about half a Quartern to a Pound, a Spoonful or two of Train-Oyl, and a little *Venice Turpentine*, and boil them gently over a Fire with continual stirring.

To take Water-Fowl with Lime-Twigs.

To take Water-Fowl with Lime-Twigs, let the Twigs be straight and long, and even, as peeled Osiers, &c. light, slender, and plyable to play in the Wind; greater or smaller, according to the Strength of the Fowl you lay them for. For a Stale, lay or set down a live Fowl (if you have one) with liberty to flutter at pleasure; then prick lightly Rods in rows about her a Foot distance from one another, and sloping, bending their Points to the Wind, or some opposite, the tops a Foot or better from the Ground. If you have another Stale or two placed at a little distance from the Twigs, it will do well, for it will make the Fowl in sight come to them, and so be intangled by the Rods. If they should, as sometimes they will, flutter away with the Twigs, then you must send your Water-Dog to fetch them.

For Web-footed Fowl, these Rods are better placed in the Water than on the Land, in shallow places, the limed part standing above the Water so thick the Fowl may not easily creep between them. If you have a Stale or two, and these Rods be green, 'twill be the better,

better, and if one Haunt fails move to another; but you must have a Dog or a Boat, or you may lose your intangled Game, by fluttering a little way off into the Water. The best Time to go to the Haunts, is an Hour before Day.

For Land Fowl observe the Haunts and Time as before; then in the same manner prick your Lined Rods slanting in even rows, so that the Tops may be within a Foot and Half of the Ground over the Haunts, one row a Yard distant from another, then have Sticks with Forks to stand pretty high, and cross Sticks over them, then Lime Strings, as you did your Twigs, placing them some rows higher than others waving, and fasten the Ends with a sliding Loop, so that if the Fowl press upon them, and they are strained, they may loosen and lap about them; and this way particularly may get you store of Plover, or any other Fowl that fly in broad Flocks, swooping close by the Ground at some distance before they light. The same Strings hung on Beams over the Water will serve to take Water Fowl. In Winter time, when no Snow lies, the Wild Geese and Barnacles resort to the Green Wheat to graze; here you must prick down large Rods in the Furrows, as near the Colour of Earth, as may be, and chuse those Furrows where there is Water; you must be concealed but not far off, and presently run in when you see any rise, for then some are entangled, whose fluttering has scared the rest; and here your Dog will be of great Use to run and take them that flutter away or get into fenny Places or Waters.

To take Land
Fowl with Lime
Twigs.

To get Plover.

And now to treat somewhat of Shooting, being the Sport that Gentlemen usually chuse for

Of Shooting Birds,
etc.

for getting Birds, wherein the Person ought to be a good Marks Man, and have a good Fowling Piece. Six Foot is a sufficient Length for the Barrel of any Piece, the Bore whereof indifferent, not quite so big as that of a Harquebuss, with a Firelock to the Piece, not a Match Lock, which is discernable to the Fowl and troublesome, being apt to extinguish in Snow, Rains, or the like Weather, whereby good Sport may be spoiled, if Gentlemen are any distance from a Town or House, or want a Tinder Box, which indeed they may carry about them, in case of having a Match Lock.

The Charge of Powder must be something more than the Proportion of your Shot in measure, but not in weight; at least a third Part. But this indeed is according to the Length and Strength of the Piece, which be always aware of overcharging. The Shot must be round, and for small Birds Seed shot will do; but for larger Hailshot, or bigger Shot, as the Strength of the Fowl you shoot at may be conceived to be stronger or weaker; for divers sorts, if their Wings be not disabled, or the vital Parts penetrated, will carry the Shot away in their Bodies, and recover their Wounds.

As near as may be always shoot with the Wind, and take the Fowl turning side-ways if you can, for thereby you have better prospect of hitting, and disabling her, if not killing it; at the Tail or the like to aim, the Shot will be apt to glance over. At Water Fowl, which are very shy, you must use Policy to come near them, and may fix a Stake in the Ground with two Forks to level your Piece, that kneeling you may take better Aim and hold it more steady; for, if in your Aim your Hand shake or Head stir, you may move the Muzzle of
your

your Piece half an Inch from a true Level, and that will in 40 Yards length be five Yards wide of your Mark. The true Level on the Ground or Water is to have the Sight of the Piece equal with the Head of the Fowl, and keep your open Eye (for with one we must wink to take a true Level) so steady, and the Butt End so fast against your Shoulder, that when it is gone off, it may remain not moved a Hair's breadth. If you shoot at a Flock are flying, meet them if you can as they fly towards you, and raise the Muzzle of your Piece flaunting by degrees, that you may take the undermost, or probably missing them hit among the uppermost, and if they be at a good height or considerable distance from you, fire as at a Mark about five or six Yards before them, which will reach them just as they pass that Place, therefore observe how or which way they take their Flight. For making a Shot at the Tree, Bush or Bank, &c. shoot at the Middle of the Flock, if there be many, and aim at one particular Bird in the Midst, letting the Bird be hid as it were in the Muzzle of your Piece, then Fire and you will have your Shot come in among them. There are many Birds that as soon as they light on the Ground fall a running as Feldfares, Thrushes, Stares, Lapwings, &c. observe which way they bend their Course most, and when they are gathered from their spreading, if you cannot conveniently, in their Face or Rear, fire with a level, Aim at the highest Part of those Foremost that are next to you, and the others running on will fall in with the Shot.

To clear a Piece when furred or fouled with firing, and to make it carry well, as also prevent breaking or splitting. Dissolve a little
Salt

To clear your Piece when furred, &c.

To keep Iron
from rusting. See
p. 35.

Salt in Vinegar over a gentle Fire, then to the horny End of your Gun-stick fasten a Rag or little Wisp of Tow, stop the Touch-hole with a small Pin of Wood, pour the Vinegar in pretty warm, as much as will a Quarter fill the Barrel, then turning it up and down, shake it well, then lay it on a level Table, and let it lie for a Time, pour out that and put in fresh, then churn it up and down with your Gunstick and Liniment, put in more till it comes out clear, then tie on a dry Liniment, heat it at the Fire, and dry the Inside of the Barrel, put the Cork then into the Bore, and set it in the Chimney Corner till it be thoroughly dried.

Of Setting for PARTRIDGE.

Of Setting for
Partridge.

No Partridge, &c.
to be taken in
the Night time.
See the Act 9.
Anne Reg. for Pre-
servation of the
Game.

Partridges are most certain to be found in Corn-Fields whilst the Corn is standing, and till the Stubble be beaten down by Cattel or other Accidents, look for them particularly in Wheat-Fields, which Grain they love above others, but when that is much trodden, see in Barley Stubble. In Harvest time, being often disturbed, they leave the Corn-Field for the Fallows adjoyning, lying among Clods or Turfs turned up. As for finding them, many do it by the Eye, which must be by use, in distinguishing their true Colour from the Ground, others by the Cock's Call and Hen's Answering, and presently gathering the whole Covey together; which you may know by their chattering and rejoicing. Others take notice by the Newness of their Dunging, Flattening the Grass or Stubble, then they are just removed and not far off. The best way is to get their true Call in all their Notes, and then if

if any be near, you may be answered: As soon as you have discovered them move off, and take a Circle round them, see how they lie, and prepare your Nets to cover them. But, if by this means you cannot find them, a setting Dog is very proper, who will find them out by the Scent. Before he be brought into the Field, he must be approved in obedience to your Signs and Voice, to stand still when he sees the Game, and then immediately fall on his Belly, and lie as snug with his Nose on the Ground as possible. If you imagine him too far off, make Signs to him to go nearer, and he will crawl on his Belly, and when near enough he will keep his Eye directly on the Partridges; then is your time to be moving, and range your Circumference about the Dog and Covey to see whether it lies close together or scattered, then make a Sign to the Dog to lie still, draw out your Net, and take you one end of the top Cord, whilst another does the same to the other, and holding it stretched, run with it where the Dog fixes his Eye, and let it fall on the Covey, then make a Noise that they may spring up and be entangled, lest otherwise taking to the run, they get under your Net and escape. This may be done by one Person staking down one of the Cords within distance, and drawing over the other; if they lie stragling you ought to have two Nets. And thus you may take Pheasants, Quails, or Moor Pouts.

And this may suffice for setting of Partridge: But under this Head it will not be amiss to treat of another sort of way for taking Fowls that fly in the Air, and that is by the Hawk; which Art is termed,

Of Fowling and Hawking.

FALCONRY.

HAWKING was a Sport utterly unknown to the Ancients, as *Blondinus* and *P. Jovius*, Lib. 2. where he treateth of the Affairs of *Muscovy*, witnesseth. It was invented and first practised by *Frederick Barbarosa*, when he besieged *Rome*. Yet, by *Ful. Firmicus*, Lib. 5. cap. 8. it appears to be known 1200 Years ago. By the *Canon Law*, Hawking was prohibited Clergy-men, as afterwards Hunting, by reason the Military Instruments, wherewith Beasts were slain, agree not with Spiritual Warfare (as some give the Reason): Also *Mahomet*, Son to *Amurath*, when he made War in *Caramania*, turned 700 of his Father's Falconers out of their Service, and caused as many Huntsmen to take up Arms and follow his Camp. Yet are Hawking and Hunting Recreations very commendable and befitting a Gentleman.

The Use of this Sport is to catch those Birds which fly high in the Air, and are not easily caught; for which your Hawk, when let lose and unhooded in pursuit of Game, ought always to have some convenient time of rising from the Fist, to soare; for unless the Hawk attain a Heighth above the Bird, she cannot strike her Prey; which she doth with such Force and Violence, as to make them be taken. Your Hawk ought to be fed with the sweet Flesh of young live Pidgeons; if not one a Day, yet every now and then one to keep them in the relish and remembrance of their Prey.

Prey. And when the Dogs have started the Game, the Hawk will be sometimes coursed a good way, which requires the best Horses speed to follow; and the Lure must be used to draw them down to the Fift. The Terms of Falconry are much to be regarded as,

A Hawk is said to *bate* when she striveth to fly from the Fift.

She is said to *rebate*, when, by the Motion of the Bearer's Hand, she recovereth the Fift.

It must be said *feed your Hawk*, not give her Meat. And after she hath fed,

A Hawk is said, *she smiteth* or *sweepeth her Beak*, and not wipeth her Beak or Bill.

By the *Beak of an Hawk* is understood the upper Part which is nooked.

The neather Part of the Beak is called *the Hawk's Clap*.

The Holes in the Hawk's Beak are called *her Nares*.

The Yellow, between the Beak and the Eyes, is called *The Sere*.

Hawks of long, small, black Feathers like Hairs about the Sere, are properly called *Crimites*.

It is said your Hawk *jouketh*, and not sleepeth.

Also your Hawk *pruneth*, and not picketh her self. Yet your Hawk cannot be said properly to *Prune her self*; but when she beginneth at her Legs, and fetcheth moisture at her Tail, wherewith she *embalmeth her Feet*, and striketh the Feathers of her Wings through her Beak.

Her fetching of the Oyl is called *The Note*.

The Hawk is said to *rouse*, and not shake her self.

Sometime your *Hawk countenances*, when she picketh her self. Then shall you not say she pruneth her self, but that *she reformeth her Feathers*.

Your *Hawk collieth*, and not breaketh.

Your *Hawk straineth*, not clitcheth or snatcheth.

She *mantleth* and not stretcheth when she extendeth one of her Wings along after her Legs, and so the other. After she hath thus mantled her self, she crosseth her Wings together over her Back; of which Action it is said, *She warbleth her Wings*.

It is said, Your *Hawk mutesheth* or *muteth*, and not sklifeth.

It is said, *Cast your Hawk to the Pearch*, and not set your Hawk upon the Pearch.

It is said, *She is a fair, long (short) thick Hawk*, and not a great Hawk.

The Hawk is said to have a *large*, or a *short Beak*; but call it not a Bill.

It is said, *Your Hawk is full gorged*, and not cropped.

Also *she hath a fine Head*, or a *small Head well seasoned*.

It is said, Your Hawk *putteth over* and *endueth*, but both of them in a divers kind; for she putteth over, when she removeth her Meat from her Gorge into her Bowels, by traversing with her Body, but chiefly with her Neck, as a Crane, &c. doth. She never endueth so long as her Bowels be full at her feeding; but as soon as she hath fed and resteth, she endueth by little and little.

If her Gorge be void, and her Bowels any thing stiff, then it is said, *She is embowelled*, and *hath not fully endued*.

Note,

Note, So long as you find any thing in her Bowels, it is dangerous to feed your Hawk.

There are several sorts of Hawks, and other Birds of Prey, as the Gos-Hawk, the Falcon, the Ger-Falcon, and all other long winged Hawks; as also Spar-Hawks, Marlions, Hobbeys, &c. for which see those Writers who have treated of these and all other kind of Fowls, Birds and Beasts at large. And,

Of *Falconry*, have wrote Emperors as well as others; for *Frederick II.* Emperor of *Germany*, wrote two Books thereof, which *Joachim Camerarius* (having by him the first Copy in Manuscript) published together with a Treatise of *Albertus Magnus*, of the Nature of Hawks, and Printed it at *Norimberg*. *Budæus* hath also wrote a large Discourse of Hunting and Hawking, Part whereof is annexed to the latter End of *Henry Estiennes's French and Latin Dictionary*. In *English*, *Mr. Blundeville* and others have written thereof. See also *Latham's Falconry*, and

Besides these already named, see also some other Treatises of *Fowling* written by the following

AUTHORS.

Willoughby's Art of Fowling. Experienced Fowler. School of Recreation. Opian's Hunting.

Of INVENTIONS.

TILLAGE or Agriculture was invented by *Ceres*, a Woman; whence *Ceres* is called, The Goddess of Corn.

The chief Authors of New Discoveries in *Anatomy*, are *Fabricius ab aqua pendente*, discovered the *Valva* of the Veins; as the *Valva* at the Entrance of the great Gut Colon, was found out by *Bobinus*. The Milky Veins of the Mesentery, by *Asellius*. The Receptacle of the Chyle, by *Pequet*. The *Ductus Virsungianus*, by *George Virsung* of Padua. The Lymphatick Vessels, by *Dr. Foliffe*, *Bartholin* and *Olaus Rudbeck*. The internal *Ductus Salivaris*, in the Maxillary Glandule, by *Dr. Wharton*, and *Dr. Glisson*. The Glandules under the Tongue, Nose and Pallat, the Vessels in the nameless Glandules of the Eye, the Tear Glandule, by *Nicholas Steno*. A new Artery called, *Arteria Bronchialis*, by *Frederick Rusch*. The Circulation of the Blood, by *Dr. Harvey*: Tho' some, upon no very good Grounds, ascribe it to *Paulus Venetus*, and others to *Prosper Alpinius*, and *Andreas Cesalpinus*.

Fishing-Nets were invented by *Diclynna*, a Woman.

The Building Stone Bridges in *England*, began in the Reign of King *Hen. I.* whose Queen, *Maud*, passing over the River of *Lue*, was somewhat endangered; whereupon she caused two Stone Bridges (being the first Stone Bridges in *England*) to be built, one at the Head of the Town of *Stratford*, the other over another Stream called *Channel Bridge*: And because these

these Bridges were arched over like a Bow, the Town of *Stratford* was called *Bow*.

The Custom of adorning Spouts and Cyfterns with Lyons Heads, is of *Egyptian* Genealogy; for because the Sun being in *Leo* (a Sign in the *Zodiack*) the Flood of *Nilus* was at the full, and Water became conveyed into every part, they made the Spouts of their Aquaducts thro' the Head of a Lyon, which hath since been practicable in *England* and elsewhere.

Other Inventions in Architecture, see the Treatise of *ARCHITECTURE*.

Arithmetick was either invented or much promoted by *Pythagoras*, by *Euclid*, (not the *Euclid* that was Contemporary to *Plato*, and hearer of *Socrates*; but the famed Mathematician of that Name) who was after *Aristotle*.

Neper invented the Logarithms, by the help whereof are performed all the Operations of Arithmetick by Addition and Substraction. He invented likewise an easie, certain and compendious Way of accounting by Sticks, called *Rabdology*; as also Computation by *Neper's* Bones.

The *Ptolemaick*, *Copernican* Systems, &c. See in *ASTRONOMY*.

Globes and Spheres were invented by *Archimedes*; and Mathematical Instruments by *Hipparchus*. Some Historians write, that *Johannes de Sacra Bosco* was the Inventor of the Sphere.

Astronomy and Astrology were invented by King *Atlas*, a King of *Mauritania*, said to support Heaven on his Shoulders.

Divination, by flying of Birds called *Auspicium*, was the Invention of *Belochius Priscus*. King of *Chaldaea*. See in *MAGICK*, p. 328.

First Erections
and Institutions
of many Particu-
lars in England.

See also at the
End of the Trea-
tise of Law.

St. Pauls, in *London*, first Built. *St. Peters Westminster* first Founded. *Oxford University* first Founded. *England*, first divided into Shires. Original of the Common Law. First Nobleman in *England* Beheaded. *Westminster Hall* first Built. First Parliament of Nobility, Clergy and Commons. Three Lyons for Arms of *England* first used. First *Lord-Mayor*. *London-Bridge* first Built of Stone. Barons first called by Writ. First Rot or Murrain in *England*. First Halfpence and Farthings made. Corn first sold by Weight. First Alderman. Order of the Garter first instituted. Women first wore high Heads, and rode Sideways on Horseback. First Custom paid to the King. First Yeomen of the Guard. First Sweating Sicknefs in *England*. Pox first known. Gentlemen Pensioners first appointed. *St. Paul's School* in *London* first Erected. Beef and Mutton first sold by Weight. The Church Service first Sung in *English*. First Provision for the Poor. First Blue Coat Boys. *Bridewel* first made a Workhouse for Poor and Idle Persons. *Royal Exchange* first so called. Baronets first instituted. Arms of *England*, *Scotland*, *France* and *Ireland* first Quartered together, &c. See in the *CHRONOLOGT* of *ENGLAND*.

Chyrurgery was first invented by *Apis*, King of the *Egyptians*; or as *Clemens Alexandrinus* records by *Misria*, the Son of *Cain*, Nephew of the Great *Noah*. See Beasts have documented Men, in *ANIMALS*.

Cattle-Curing was first invented by *Chiron* the *Centaure*.

Guns and Powder were invented or found out by *Bartholdus Swart*, a *Franciscan Fryar*, about *Anno 1380. temp. Rich. II.* by means of mixing Salt-peter and some other Ingredients
in

in a Mortar, on which he had placed a Stone, and having occasion to light a Candle, in striking Fire a Spark thereof fell into the Mortar, and fired off the Composition.

The first that used that deadly Engine the Gun, were the *Venetians* against the Inhabitants of *Geneva*.

Mr. *Robert Boyle* contrived the Experiment concerning the different Parts and Redintegration of Salt-peter. See towards the End of this Treatise.

Money was invented and first coyned at *Rome*, by *Servius Tullius*.

Janus first invented the Brass Money, called *Æs*.

Peter Pence was first instituted by *Offa*, King of the *Mercians*; or as others by *Ina*, King of the *West-Saxons*. See CORNS and MEDALS.

Dying in Purple, was found out at *Tyre*, by the Accident of a Dog seizing the Fish, called *Conchylis* or *Purpura*; which stained the Dogs Mouth of that Colour.

Gnomens of Dyals were first invented by *Anaximander* the Philosopher.

Torricellius found out the Barometer, where by we weigh the Air it self.

The famous Pneumatick Engine or Air Pump, was invented by the honourable *Robert Boyle*. He giveth a full Account of it in his Discourse of *Physico-Mechanical Experiments*; by the Help whereof he proves the Elastick Power and Spring of the Air, and several other wonderful Phenomena's relating to the Nature, Spring, Expansion, Pressure, Weight of the Air, &c.

Earthen Vessels were first invented by *Coreobus*.

About

About the 10th of Queen *Elizabeth*, *Richard Dyer*, after he had been many Years in *Spain*, learnt the Art of making Earthen Furnaces, Earthen Fire-pots, and Earthen Ovens, transportable; and for a time had a Patent to have the whole Profit himself.

The Art of making Salt Water fresh, was lately invented in *England*, and may be done by Percolation, or straining oft thro' Sand, whereby the Saline Particles are left behind, according to the Opinion of some worthy Authors.

Robert Brocke, one of the Chaplains to King *Hen. VIII.* first invented the manner of Casting Pipes of Lead for Conveyance of Water under Ground, without using of Sodder; but *Robert Cooper*, Goldsmith, was the first that made the Instruments, and put this Invention in Practice.

The bringing the *New River* Water to *London*, was the Invention of one *Hugh Middleton* of *London*, in the time of King *James I.* See *CHRONOLOGY*, p. 239.

Sir Robert Gorden of *Gordistown*, lately invented the Water Pump; which will draw twice as much Water as any other, yet is wrought with half the Force, and in less than half the Time. Costs but half the Price, and takes up but half the Room. The Experiment performed at *Deptford*, March 22. 1687. before the Lord *Dartmouth* and Commissioners of the Navy, appointed to give account of it to his Majesty.

Buying and Selling was first invented by *Bacchus*.

The *Næmean* and *Olympick* Games, &c. *Christmass* Sports, &c. See our Treatise of *GAMES*.

Tilting

Tilting and Tournaments were invented by *Manuel Comnenus*, Emperour of *Constantinople*, as saith *Nicetas*, who wrote about *Anno 1214*.

Coaches were invented in *Hungary*, and there called *Cotzki*. Some say they were invented by *Erichthonius*, who had Feet very deformed.

Sailing-Coaches were invented by *Simon Stevinus*, and are us'd in *China* and plain Countries; and they will run 14 Leagues in less than two Hours. See in *MATHEMATICAL MAGICK*, p. 349. and *GEOMETRY*, p. 157.

The Inventor of Water-Mills is not known; therefore *Polydor Virgil*, in his Book *De Invent. Rerum*, L. 3. refers them amongst other fatherless Inventions. *Pliny*, in his *Nat. Hist.* L. 18. c. 10. mentions them as commonly used in his time. But others affirm *Belisarius*, in the Reign of *Justinian*, did first invent them; whence *Pancirollus* concludes, that it is likely their Use was for some space intermitted: And being afterwards renewed again, they were then thought to be first discovered.

Mathematical Instruments were invented by *Hipparchus*.

Clocks, Watches and Chariots are said to be invented by the *Flemmings*.

The Instrument of Perpetual Motion was the Invention of *Cornelius Van Drebbel* a German.

Weights and Measures were first found out by *Phidon* an *Argive*, A. M. 3146.

A Man's Visage represented in Plaister or Alabaſter was the Invention of *Lisistratus*; who took the Shape off the Face in a Mould of Clay or the like, and then cast the Protraiture or Image in Wax. He was of *Sicyone*.

The Maze or Labyrinth in *Crete*, was invented by *Dædalus*, whence all profound Inventions were called *Dædales*; and the *Latins* fir-named the Earth *Dædale*. See Artificial Rareties in *GEOMETRY*.

Figured or Pictured Vessels were invented by *Diburades* a Potter of *Corinth*.

The Iron Saw was invented by *Talus*, seeing the Jaws of a Serpent.

The Axe, the Plummet, the Augur, Glue, Cement, and moving Statues, were first made and invented by *Dædalus* above.

Letters were invented by *Abraham*. *Teste Philo*.

Three of the *Greek* Letters were invented by *Claudius Cæsar*.

Psamneticus's Invention to find the first Language of the World. See *GRAMMAR* and *LANGUAGES*, p. 41.

Grammar is said to be invented first among the *Grecians* by *Prometheus*. See the Treatise of *GRAMMAR* and *LANGUAGES*, pag. 42.

Parchment was invented by *Attalus*, King of *Pergamena*.

Paper was invented in *Egypt*, the Author of which most happy Invention is not known, that is the Paper made with Rags. The ancient *Papyri* was a sedgy Weed that grew on the Banks of *Nilus*.

White-brown Paper was first made in *England*, especially in *Surry*, and about *Windsor*, temp. *Jac. I*.

Letters of Cyphers or obscure Writing, was first used and invented by *Julius Cæsar*: Tho' some say, Private Characters of Writing were invented by one *Turo*.

Brachygraphy or Short-hand Writing, is said to be invented by *Mæcenæus*.

PRINTING, according to *Polydore Virgil*, was first invented by *John Guttemburg*, practised at *Harlem*, and perfected at *Mentz* in *Germany*, and is said to be proved first by one *John Faust* or *Fust*, who Printed *Tullii's Officiis* being the first Book was ever Printed; wherefore some attribute the Invention to *Fust*, and some to *Lawrence*, the Burgher of *Harlem*. It was first brought into *England*, and used here by *William Caxton*. See *Hen. VI.* in our *Chronology* of *England*. The *Chinese* are said to have this Art before the *Europeans*.

Points for Reading, were invented long before Printing by *Thrasimachus*, Scholar to *Isocrates*.

The setting Seals to Bonds and Writings was first used in *England* after the *Norman Conquest*. Before that time there were only Witnesses to Deeds.

Georgius Leontinus was the first that durst undertake to discourse in a Publick Assembly on any Subject should be offered to him. *Sir Thomas Moor*, being at *Bruges* in *Flanders*, found a Thesis set up by a Man, That he would Answer any Question could be propounded to him in any Art whatsoever. Wherefore *Sir Thomas* ordered this to be put up for him, *Ubi Averia capta in Withernamio sunt irreplegibilia*. The Man not understanding the Terms of our Common Law, could not Answer it.

Many Institutions and Ordinations in Law. See at the End of the Treatise of Law.

Raymund Lully hath invented a prodigious Art, to enable any one to discourse *Extempore* on any thing whatever.

The Art of Memory was first invented by *Simonides Melito*; and after taught by *Seneca*,
who

who could repeat 2000 Names or Words any way upon twice hearing of them.

Magick was invented by *Athrax*.

Flavius Goia of *Memphis* or *Amalphis*, in the Kingdom of *Naples*, is thought to be the Inventor of the Mariner's Compass of 8 Winds, about 300 Years since. The Remainder of the 24 are said to be perfected by the People of *Antwerp*.

Metals were first found out by *Cadmus*.

The first finding out of Metals is thought to be owing to the Conflagration of Woods. So *Aristotle* tells of Shephards in *Spain*, who setting a Wood on Fire, found Molten Silver ran down in the same Place.

Iron was invented, and the Means of Working it, by *Tubal-cain*, mention'd in Scripture. See hereafter.

The Proportion of Metals was first found out by *Archimedes*; who was so transported at discovering what quantity of Silver was mixed in a Crown of Gold, that he ran about the Streets like a Madman, crying, I have found; I have found; I have found. See in the Treatise of *ERRORS*.

Lynceus is said to be the first Discoverer of Mines. See the Explanation of Poetical Fictions in *POETRY*.

The Stone call'd *Lapis Calamindris*, which is of great Use in Brass Works, was first brought into *England*, temp. *Eliz. Reg.*

Musick is said to be found out by the beating of *Vulcan's Cyclops*.

Some say Musick and Verse were invented by King *Bardus*, in the time of *Abraham*.

Musical Accords to the Sound of the Hammer was invented by *Pythagoras*.

The Viol, Lute, Cymbal, Virginal and Organ, are all said to be invented by *Jubal*.

The

The Harp is said to be invented by *Mercury*.

Guido Aretine, Anno 1028. invented the Six Syllables used in Vocal Musick, *Ut, Re, Mi, Fa, Sol, La*.

The First Ring of Bells in *England*. See in *ARITHMETICK*, p. 145.

Ships with Decks, and also Gallies, were an Invention of the *Egyptians*.

Open Vessels were invented by the *Phœnicians*.

Large Ships were the Invention of the *Cypriots*.

Skiffs or Cock-Boats were invented by the *Illyrians*.

Brigantines were invented by the *Rhodians*.

Frigots were invented by the *Cyrenians*.

Ferry-Boats were invented by the *Salamynians*.

The Oar was invented by the *Bœotians*.

Grapling-Hooks were invented by *Anacharsis*; who also found out the Anchor and the Potter's Wheel.

Fireships were invented in the Reign of Queen *Elizabeth*; when some of the Queen's Commanders filled some old Vessels with a great deal of Pitch, Tar, and other combustible Matter, and set them under full Sail to run (on Fire) among the *Spanish* Ships (called the invincible *Armada*) then lying at Anchor ready to invade *England*, by which means they were disordered, burnt, &c. and that Fleet forced to return without doing any thing.

The Rudder or Helm was the Invention of *Typhis*; who, observing a Kite in flying, steered her self by her Tail, invented that by Art, which he had discerned to be in Nature.

The Mariner's Compass. See the Page before.

Masts

Masts and Sails were the Invention of *Dædalus* and *Icarus*.

*The Tyrians first the Art did find,
To make Ships travel with the Wind.*

Marriage was first invented by *Cecrops*, first King of *Athens*; who also found out Images and built Altars, A. M. 2394. He built *Athens*; but some say, *Theseus* was the Founder of that City.

Polygamy was invented by *Lamech*.

About the 8th of Queen *Elizabeth*, *Spanish Needles* were first taught in *England* by *Elias Crowse* a German.

Cloath-making was first invented by the *Flemmings*.

Boyling and Baking of Sugar was first found out by a *Venetian*, who, refining it, got above 100000 Crowns; which, in those days, was no small Riches. It is about or little more than 200 Years since.

Spinning was first taught in *England* by *Anthony Bonviss*, an *Italian*, about the 20th of *Hen. VII.* at which time began the making of *Devonshire Kerfies*, and *Coxal Clothes*.

Spinning, Weaving and Colouring Cloth, were invented by *Minerva* a Woman; but whether the Goddess *Minerva*, I know not.

The Art of making Wine was invented by *Aristomachus*; the old *Romans* could perserve Wine 100 Years by Smoak.

The making Drink of Barley, is thought to come from *Egypt*. See the Treatise of the *IGNORANCE* of the *ANCIENTS*, Numb. 5.

About

About the 14th of *Hen. VIII.* Turkeys were brought into *England*: Also planting of Hops brought from *Artois*, &c.

Making of Honey was invented by *Melissa* a Woman. See Explanation of some Poetical Fictions in *Poetry*.

Oyl and Rennet to make Cheefe were invented or found out by *Aristeus*. See pag. 507. in *IGNORANCE* of the *ANCIENTS*.

Mrs. Dinghen van den Plasse, born at *Teenen* in *Flanders*, Daughter to a worshipful Knight of that Province, came with her Husband to *London*, and profess'd her self a Starcher, *Anno 1564.* being the first openly taught Starching in *England*. Her Price was four or five Pounds to teach how to Starch, and twenty Pound to teach how to Seeth Starch; and the *English* Gentry made great Use of her.

In the 4th of Queen *Elizabeth*, *John Rose*, dwelling in *Bridewel*, invented an Instrument with Wyer-Strings, called the *Bandora*; and left a Son who excelled himself therein.

In 1564. *William Rider*, Apprentice of Mr. *Thomas Burdet*, against *St. Magnus*-Church at the *Bridge-Foot*, *London*, chancing to see a Pair of Knit Stockings, in the Lodging of an *Italian* Merchant that came from *Mantua*, borrowed those Stockings, and caused others to be made by them; and these were the first Worsted Stockings made in *England*. Within few Years after, the making of *Fersey* and Woollen Stockings began to wax common.

In 1599. *William Lee*, Master of Arts of *St. John's-College*, *Cambridge*, first devised the Art of Weaving Silk Stockings, and perfected the Art of Knitting.

Mr. *John Tyce*, dwelling near *Shoreditch-Church*, the first *Englishman* that devised and

attained the Perfection of making all manner of Tufted Taffata's, Cloth of Tissue, Wrought Velvets, Branched Sattins, and all other kind of curious Silk Stuffs.

About the 5th of Queen *Elizabeth*, began the making of Bays, Says, Serges, &c. in *England* by *Dutchmen*, who fled hither to avoid the Persecution of the Duke *d'Alva*. Of Gowns, see in *IGNORANCE* of the *ANCIENTS*.

About the beginning of the Reign of King *Hen. VIII.* began the making of *Spanish* Felts in *England*, by *Spaniards* and *Dutchmen*.

In the 5th of Queen *Elizabeth*, *Richard Mathews*, at *Fleet-bridge*, obtained a Prohibition against all Strangers bringing Knives into *England*; and was himself the first *Englishman* that attained the Perfection of making fine Knives and Knife Hafts.

About the same time the *Englishmen* began to make all sorts of Pins; which before, Strangers had sold here to the Value of 60000 *l.* a Year.

Masks, Busks, Fans, Perukes, were first devised and used in *Italy* by *Curtezans*; whence it went to *France*, and came to *England* about the time of the Massacre of *Paris*.

Queen *Elizabeth*, Anno Reg. 23. by Proclamation, repressed Excess in Apparel, Gold Chains, and Cloaks which Men wore down to their Heels, and limited Swords to be but three Foot long, and Daggers 12 Inches, besides the Hilts, which is the size they now customably bear.

Glass was invented by a Man in *Tiberius's* time, who put him to Death for fear it should detract from Gold and Silver, and they lose their Value. See Artificial Rareties in *GEO-METRI*.

METRY. The first Makers of Glafs were the *Sidonians*; and it was brought into *England*, Anno 662. by *Benault* a Foreign Bishop. Glafs Windows, &c. see in **OPTICKS**.

The Telleſcope was invented by *James Meſtius* of *Amſterdam*; tho' oft aſcribed to *Galilee*, who only improved it.

Pictures in Glafs, and laying Colours in Oyl were invented by the *Flemmings*. Others write, *John van Eyck* was the firſt Inventor of Painting in Oyl.

Hour-Glaſſes were invented by the *Sicilians*, who alſo firſt made Paſtoral Eclogues.

Phyſick was invented by *Chyron*; ſome ſay by a fam'd Phyſician in *Egypt*, named *Hermes Trimegiſtus*: Others attribute it to *Æſculapius*. See **PHYSICK** and **ANIMALS**,

Mithridate was invented by *Mithridatus*, King of *Pontus*, who had ſo fortify'd his Body therewith, that upon his Son's Rebellion, when he attempted to Poyſon himſelf, he could not do it.

Allum. See in the Explanation of Medicinal Drugs, in **PHYSICK**,

Tragedy was invented by *Arion*, an eminent Poet and Muſician.

Comedy was firſt writ and invented by *Andronicus*, A. U. C. 400.

Verſe is ſaid to be invented by King *Bardus* in the time of *Abraham*.

The *Aſclepiad* Verſe was invented by *Aſclepiades* the Rhetorician.

The *Sapphick* Verſe was invented by *Sappho*, an Heroick Woman, eſteemed a Tenth Muſe; but whether the ſame *Sappho*, which taught Birds to pronounce *Sappho* as immortal, I know not.

Latin Verse was first made here in England by *Adelme*, first Bishop of *Sherborne*, and the first *English* Man that wrote in *Latin*.

Rhetorick is said to be invented by *Empedocles*.

Wild-Fire was invented by *Calinicus*, at the Siege of *Constantinople*, Anno 718.

Watch-words and Centinels in Armies were invented by *Palamedes*.

The Battle-Axe was invented by *Penthesilea*, one of the *Amazon* Queens. In 35 H. VIII. The first cast Pieces of Iron that ever were made in *England* were made at *Buckstead* in *Sussex* by *Ralph Hage* and *Peter Bawde*.

Queen *Elizabeth* was the first that caused Gunpowder to be made in *England*, which before was had from Foreign Parts, and at dear Rates. See in this Treatise before.

Scaling-Ladders were invented by *Capaneus*, a Noble *Grecian*, at the Siege of *Thebes*.

The *Prætorian* Guard was instituted by *Augustus*.

Custom of having
Flags over our
Sepulchers. Vide
Margin, p. 391. in
Heraldry.

The Sword is supposed to be invented by the ancient *Saxons*, who made it bowing like a Scythe (or a *Turk's* Scymitar now) which they took for their Pattern; and a Scythe they called *Saisen*; a Sword, *Seaxes*; and short Swords, *Hand Seaxes*: And from using this kind of Weapon, they are thought to take the Name of *Saisons* or *Saxons*. See *Verstegan* XXI.

It is not without some Probability that the Pike was invented by the People of *Picardy*; from the great Use of which Weapon they had the Name of *Piccards*.

The Trumpet is derived from the *Romans*.

The Custom or Invention of Wearing Feathers in the Hat, came from the People of
Pic-

Pteropherus, a Region of *Scythia*, who wore 'em in memorial of their *Changus Cham* Emperor, who had been once preserved and saved by means of an Owl, whose Feathers they afterwards wore.

In *Hungary*, the greatest Asperion is the Name of a Coward, which cannot be wiped off without killing a *Turk*, after which they are priviledged to wear a Feather.

The Custom of wearing Rings on the Fingers is of great Antiquity, and were used as Tokens of Remembrance. *Plutarch* writes that *Cæsar* used to weep at the sight of *Pompey's* Ring, which he wore after *Pompey* was slain; and *Pliny* saith, that *Jupiter*, to keep in Memory the Punishment of *Prometheus*, for that he deceived the Goddess of the Element of Fire, and did bring it to Man's use, made a Ring with a Stone therein, and wore it.

Margaritone, the famous Painter, was the first that devised and invented laying Gold or Gilding upon *Bole Armoniack* to be burnished, and the Glue for Picture Tables, which never will decay.

Thales the Philosopher and Astronomer, first found out the Eclipses and Declensions of the Sun, first observed the *Solstices* and *Equinoxes*, and first divided the Year into 365 Days. See more in the Tract of famous Philosophers in our Treatise of *PHILOSOPHY*. See also *ASTRONOMY*.

Eclipses first found out, and the Year first divided into 365 Days.

Hawking was invented and first practised by *Frederick Barbarosa*, when he besieged *Rome*.

Hawking. See Falconry in the Treatise of Fowling.

Pelagius, Pope, or Bishop of *Rome*, about 555 Years after Christ, was the first that made a Law to Punish for Religion, and Burning for Heresy was first put in Practice in *Eng-*

land

land in the Reign of King Henry IV. Burning for Petit-Treason. See in *Law*, Vol. I. p. 361.

The first Simoniacal Bishop of *England*, was *Wina*, Bishop of *London*, A. C. 666. See *Cressy's Church History of Britain*, p. 405. The Sale of Holy Things is called *Simony*, from *Simon* the Magician's offering Money to the Apostles for the Holy Ghost. Of this *Simon* see the first of the principal Hereticks in our Treatise of RELIGION, and in MAGIC, p. 326. *Fanaticks*, whence the Name, p. 336.

St. *Swibert* was the first Saint that was solemnly Canonized.

Uriah the Priest, and *Zechariah* the Son of *Jeberachiah*, are thought to have been God-fathers at the Circumcision of *Mahershalal-hash-baz*, Isa. 8. 2. and from them the Custom of having God-fathers in Baptism is thought to have taken its Original. *Stukius de Conviv.* Lib. I. Cap. 16. And although Christening of Children be as Ancient as the Christian Faith, yet was it quite disused in *England* after the *Danes* came in, 'till King *Eldred*, Anno 946. compelled the *Danes* to be Christened.

Singing of Psalms was brought into the Church, Anno Dom. 383. and the Church-SERVICE was first said in *English*, Anno 1548. The Psalms were turned into Metre by *Sternhold* and *Hopkins*, Anno Christi 1552. See Poets in POETRY.

Swearing by the Gospel was instituted by *Justinian*, Anno Dom. 528.

Lent was first set up in *England*, Anno Dom. 640. *Baker* in his Chronicle, p. 6. saith, *Er-combert* the Seventh King of *Kent*, (who reign'd about An. 650.) was the first command-the observing of *Lent*, and in his Days the Archbishop *Honorius* divided *Kent* into Parishes.

riches. Of the Fast on Friday, and its great Antiquity, see in *Cressy's Church History*, p. 376. Of Rogation Week and Ember Days, see at the end of our Treatise of ASTRONOMY, as also of the Church Holy-days.

Organs were brought into the Church by *Vicilian*, Anno 657.

Tythes were first established in *England*, Anno 786.

Bells first ordained to call People together, Anno Christi 603. Of the first Ring of Bells in *England*, see in ARITHMETICK, and and of Bells of a prodigious Size and Weight, see in Magnificent Buildings of the Ancients in ARCHITECTURE.

The Bible was first translated into *English* by *William Tindal*, 21 Henry VIII. and then printed; and was new translated, Anno 1611. It had been anciently translated into the *Saxon* Tongue, about Anno 940.

The Bible was first divided into Chapters, Anno 1252.

Standing up at the Creed is a Custom of *Polish* Extraction, the People of that Country using to draw out their Swords when their Gospel was reading, to signify they were ready to defend the same against all; and we use it, to express how prepared we are to Believe it, and how Resolute we are to Maintain it.

First Fruits are the Profits of every Spiritual Living for one Year, and were anciently gathered throughout all *Christendom*, and given to the Pope; but First Fruits and Tenths of all Spiritual Dignities and Promotions, which were first given to the King of *England*, was unto King *Henry VIII.* Anno 1535. And the calling the King of *England* Supream Head of

the Church of *England*, began *Anno* 1530. See more at the end of our Treatise of *LAW*.

The first using to read and teach the Lord's Prayer, Ave, Creed, the Commandments, &c. in *English*, was by particular Charge given to the Curates from *Thomas Cromwell*, Lord Privy Seal, and Vicar-General to King *Henry VIII.* to which Injunctions the King's Spiritual Seal was affixed, and so sent to the Prelates and Clergy of the Realm. The Custom of saying, *Secundum usum Sarum*, proceeded from *Oswald* Bishop of *Salisbury*, *Temp.* *William* the Conqueror, who devised a Form of Prayers to be used in his Church, and was afterwards daily used in other Churches, whence arose that common Saying.

The Registring of Weddings, Christenings, and Burials, began first 30 *Henry VIII.* when it was ordained by *Cromwell*, the King's Vicar General, that they should be Registred in all Churches, and in every Parish for ever.

The Burying of the Bodies of the Dead within the Walls of Cities, began first in the Reign of *Cuthred* (some Chronicles have it *Cuthbert*) King of the *West Saxons*; before whose Time the Dead were interred always in the Fields, but *Dr. Hall*, Bishop of *Norwich*, *Anno* 1650, thought the Church was not a fit Place for Burial.

Of *Inventions* lost, read *Pancirollus*, who wrote a Book, *De Antiquis Deperditis*.

The old *Romans* could preserve their Wine 100 Years by Smoak, an Art now lost.

See turned Work in the Catalogue of Rareties in *Gresham College Rareties*.

Of Histories, and other Works lost, see in *HISTORY*, and Poets in *POETRY*.

Epsom

Epsom Waters were found out about 1618. by one *Henry Wicker*, who in a dry Summer, when the Cattle were in great want of Water, discovered some Water standing in the Footing-hole of some Beast, which he at first suspected to be their Urin, but observing the clearness thereof, he with his Staff digged a square Hole about it, and so departed. Returning next day, he found a most clear Water springing up in the Hole; but the Cattle tho' very Thirsty would not drink thereof, it having a Mineral Taste, which is caused by running thro' some Veins of Alom. And these Waters have now got a great Reputation in the Cure of many Diseases. Of other Medicinal Waters in this Kingdom, see in the Treatise of *ELEMENTS*, Vol. 1. p. 123.

Country Wakes, whence their Original. See Vol. 1. p. 336. Several other Inventions and Discoveries may be seen in the several Treatises of this Book.

Of *IGNORANCE* in the ANCIENTS.

THE Treatise of *Inventions*, as also of *Egyptian Hieroglyphicks*, and others, give us sufficient cause to admire the Knowledge and great Judgment in many of the Ancients that were so deeply learned in Natures School and Humane Science, which also the *Hieroglyphicks* used by the Ancient *Germans* and *Saxons* well evidence; yet that our Ancestors and others were not all so blessed with Learning, but

See History.

but that their Times did afford some, whose Cimmerian Ignorance to appear in the Light of our Times, makes a Discovery, which naturally must inforce our Mirth, and that is not the least Reason of Collecting the following Passages, sequestred from several Authors.

So of late Years it hath been discovered that the Seas under the Pole are not Frozen up, as hath been believed formerly. See *Geo. Best*, his Sea-Chronicle, and *Moxon*.

Virgilius, Bishop of *Saltzburg*, having written a Tractate concerning the *Antipodes*; complaint was made thereof, first to the Duke of *Bohemia*, and afterwards by the Archbishop of *Mentz* to Pope *Zachary*, Anno 745. whereupon *Virgilius* (unfortunate in being learned in such a Time of Ignorance) was excommunicated. *Heylin*, p. 280.

Yet did the Cosmographers make its Circuit 1136 French Miles.

Pope *Clement VI.* electing *Lewis* of *Spain*, Prince of the Fortunate Islands; the *English* Men thought he had been chosen Prince of *Britain*, and our Ambassadors hasted into *England* with all speed from the Pope to certify us of it. That there were several who were Ignorant in *Geography* is not to be doubted, when *Ephorus* writes there was but one City in *Spain*; *Stephen* the *Grecian*, that *Vienna* was a City of *Galilea*; *Conradus Celius*, that the *Dacians* and *Cimbrians* were the same; and that the *Riphean* Mountains were in *Samaria*; also that *Amber* distils out of a Tree. (See the Commodities of *Europe* in our *GEOGRAPHY*.) *Strabo*, that *Ister*, which is the *Danow*, rises not far from the *Adriatick*, &c. And the People of Old had knowledge of no more than Seven Climates, whereas there is now reckoned Forty Eight.

The *Anthropomorphites* ascribed Humane Figure unto God, after which they conceived he created Man in his Likeness.

The Ancients were wholly Ignorant where the Head of *Nilus* was, which is now known to

to rise in vast Marshes near *Montes Luna*, not far from the Cape of *Good Hope*.

Aristotle himself was Ignorant of the Flux and Reflux of the *Euripus*, for which reason he (as is said) drowned himself therein. See Water in the Treatise of *ELEMENTS*.

Strabo affirms our Ancestors, the *Britains*, were so simple, that though they abounded in Milk, they had not the Artifice of Cheese. And the making Drink of Barley was a thing formerly unknown to any Nation of *Europe*, the *Britains* only excepted, to whom this Art is (and not improbably) conjectured to have been brought by the *Phœnicians* from *Egypt*. See *Britt. Speculum*. 42.

The Ancients thought the Torrid or Burning Zone was uninhabitable.

The Ancients were so Ignorant in the causes of an Eclipse, that they attributed it to the Power of Witchcraft, and at such times feared the Extinction of the Stars. *Archelaus*, King of *Macedon*, caused once his Palace Gates to be shut up, and his Son's Hair to be cut off (a Ceremony used at Solemn Mournings) because there happened an Eclipse. Some Nations used at such time to strike against Brass Instruments, &c. and make great Clamours and Noises, thereby to ease the Moon, and free her from those Labours she was supposed to lie under by means of Inchantments, Sorceries, &c.

King *Alfred* said when he came first to his Kingdom, he knew not one Priest on the South-side *Humber* understood his Service in *Latin*, or could translate an Epistle into *English*.

A *French* Bishop being to take his Oath to the Archbishop of *Canterbury*, finding the word *Metropolitica*, not able to pronounce it, said, *Soit pour diſt*, Let it be as spoken.

Du

Du Prat, Bishop and Chancellor of France, receiving a Letter from our King *Henry* the VIIIth, to King *Francis* I. of France, amongst other things was written, *Mitto tibi duodecim Molossos*, I send you twelve Mastiff Dogs; the Chancellor taking *Molossos* to signify Mules, made a Journey to Court to beg some of them from the King, who desiring to see the Letter, smiled; and the Chancellor finding himself deceived, said he mistook *Molossos* for *Muletos*, making the Matter thereby worse.

In the Time of King *Henry* VI. of England, the Motto of the Martial Earl of *Shrewsbury* was, *Sum Talboti, pro occidere inimicos meos*, the best Latin that his Camping Chaplain and the Age could afford him.

Vargas, a Spaniard, was President, and a great Statesman in *Flanders*, the Doctors of *Louvain* Petitioning him in Latin for their Privileges, he gave this for Answer, *Non curamus vestros Privilegios. Mali faxerunt templa, boni nihil faxerunt contra: ergo debant omnes patibulari*. The Terms of the Expostulation being as harsh as the Conclusion of it; and some polite Orators, had rather have been hanged indeed, than threatned in such Latin.

See the Kalendar Verses, beginning *Prima dies Mensis*, &c. in Observations of Days lucky and unlucky. ASTROLOGY.

Verstegan, in his Antiquities, Printed, Anno 1605. saith, Fo^o. 205. "It fell out not many
"Years past that a principal Courtier writing
"from London to a Personage of Authority in
"the North Parts, touching the training of
"Men, and providing Furniture for War, wil-
"led him among other things, to Equip his
"Horses;

“Horses; the Receiver of the Letter, with
 “some Labour, came at last to the under-
 “standing of it all except *Equip*, whereof in
 “no sort could he conceive the meaning: In
 “the end he consulted about it with divers
 “Gentlemen in the Country thereabouts, but
 “none could resolve him. It was among
 “them remember’d that we used in our Lan-
 “guage the word Quipping, and the word
 “Whipping; the first not proper for Horses,
 “but sometimes used to Men, the latter not
 “fit for Gentlemens Horses, but for Carters
 “Jades. In fine, none of them all being able
 “to find in all the *English* they had, what
 “*Equip* might mean, a Messenger was sent on
 “Purpose to the Court at *London* to learn the
 “meaning thereof of the Writer of the Let-
 “ter. Thus far *Verstegan*.

The Tenth Age was so dull, that Pope *Silvester* passed for a Magician, because he understood Geometry. *Vide, Baron.* And upon *Turrianus*’s sending little Artificial armed Men to move before the Emperor *Charles V.* of which see in *GEOMETRY*, p. 159. the Prior of *St. Ferom* being unskilled in the *Mathematicks*, supposed it to be by Witchcraft.

We read the Inhabitants of the *Baleares* (Islands in the Mediterranean) being so greatly stocked with Coneys, that they undermined Houses, and threw down Walls, &c. The Inhabitants armed themselves and fought with them; but that not prevailing, they sent to the *Romans* for Aid, who taught them the Use of Ferrets.

Dr. *Fuller*, and others, make mention of the Simplicity of the Primitive *British* Buildings; For, saith he, we find that *Hoel Dab*, King of *Wales*, *Anno Dom.* 940. made himself a Palace
 of

of Hurdle-work, called *Tyguyn*, or the *White-House*; which they to advance it above other Houses then in Being here, strip'd off the Rind, or unbark'd the Rods wherewith it was made, and this was then counted gay and glorious. See also *Cressey's Church History*, Lib. 2. C. 7.

Of our Ships and Vessels being anciently made only of Board and Wicker. See in *NAVIGATION*, p. 216.

Mark Anthony suffered a greater Execution than the Enemy intended, by throwing their Fire-works into his Fleet, when his Soldiers sought to quench the Flames with the throwing on Salt-water; but it was the Ignorance of the Saylor's of that Time, who knew not, that the Nature of Sea-water is to foment a Fire. See in the Treatise of *ELEMENTS*, p. 128.

Falconry was wholly unknown to the Ancients. See in the Treatise of *FOWLING*, p. 482.

The old *Britains* (meaning the Inlanders) were anciently no better cloathed than with Skins of Beasts, many of them going naked; but the Sea-Coasts, or *Gaulish Britains*, had learned to wear the same sort of Habit as the *Gauls*; the most remarkable whereof were *Gannacum*, (whence our word *Gown*) which was a thick Covering made of course Wooll, having a Nap on both sides like Freeze, worn by the *Gauls*, and better sort of *Britains*, and was only to keep out the Cold. See *Brit. Spec.* 43. Cloth-making was first invented by the *Flemmings*.

See the Treatise following, of *Errors among the People*.

Of ERRORS

Among the

PEOPLE.

THAT *the World is but One*, is a common received Notion, and seemingly grounded on Scripture, as well as *Aristotle's* Authority, who sets down two chief Arguments for it, viz.

That the World is but One.

1. That since every heavy Body doth naturally tend downwards, and every light Body, as Flame, Smoak, &c. upwards, what a huddling and confusion (saith he) must there be if there were two Places for Gravity and two Places for Lightness; for it is probable that the Earth of another World would fall down to this Center, and so mutually the Air and the Fire here ascend to those Regions in the other, which must needs much derogate from the Providence of Nature, and cause great Disorder in his Works. But to this is answer'd, That if any Person will consider the Nature of Gravity, he will plainly see no Ground to fear such Confusion. For Heaviness is nothing else but such a Quality as causes a Propension in its Subject, to tend downwards towards *its own* Center; so that for some of the Earth of another World to come hither, could not be said to be a Fall, but an Ascension, since it moved from its own Place, and this were impossible because against Nature. 2. *Aristotle's* Second Argument is from his Master, *Plato*, viz. That there is but one World, because there is but one first Mover, God. In Answer

It was noted of *Ælius Hadrianus* for an Error in his Mind, that he should desire to Comprehend all Things.

whereto

whereto we deny the Consequence, since a Plurality of Worlds doth not take away the Unity of the first Mover; for, as the Substantial Form, so the Efficient Cause hath only an appearing Multiplicity from its particular Matter. But some again will say, 1. *Moses* tells us but of One. 2. *St. John* speaking of God's Works, said, He made the World, in the Singular Number, which is also the Argument of *Aquinas*. 3. The Opinion of more Worlds than One has been accounted an Heresy, witness *Virgilius's* Excommunication. 4. *Aquinas* says, if there is more than One, they must either be of the same, or different Nature, and since one probably would have no more Perfection than another, it must be of the same Nature, which would argue an Improvidence; if of different kind, then one of them could not be called the World, or Universe, since it did not contain Universal Perfection. To the two first of these Assertions is answer'd, That the Negative Authority of the Scripture is not prevalent in those things that are not Fundamentals of Religion: It speaks not of other Planets, but only the Sun and Moon, in *Moses*, *Job*, nor the *Psalms*, frequent in Astronomical Observations. And *Moses* and the Prophets aimed not to discover any Philosophical Subtleties, but rather to accommodate themselves to vulgar Capacities, and therefore in the Creation he writes nothing of the Air, being a thing invisible to the People, who knew not whether there were any such Element or no. To the third Assertion we need only say, That the Ignorance of Primitive Times condemned what they did not understand, as in this very case of *Virgilius's* Excommunication for what hath since been manifestly

manifestly proved to be true. To the fourth, the Term *World* may be taken in a double Sense, generally for the whole Universe, particularly for an inferior World, consisting of Elements. So that in one Sense there may be but One, but in the proper Sense, if every Star and Planet were a World, that Multiplicity is comprehensive in the word Universe, and all those great Globes, like the Parts of our known World, come under the Denomination of a World; and 'tis plain, such Plurality doth not contradict Scripture or Reason, as he may find who will take the Trouble to peruse that Book, Intituled, *The Discovery of a New World in the Moon*. The Error about the Astronomical Systems of the World. See *ASTRONOMY*, p. 252, 253.

Humanum est Errare. The Prophets have erred a little through Human Frailty. *Moses* failed in telling the People he would not only bring them out of the Land of *Egypt*, but carry them into the Land of *Canaan*; which latter he did not. *Jonas* in foretelling the Destruction of *Nineveh* within forty Days; *Elijah* in many Things to come in the Days of *Ahab*, which yet were not fulfilled 'till after his Death; *Isaiah* in the Death of *Hezekiah* the next day, when his Life was prolonged fifteen Years after; *Matthew* failed when he wrote that Christ was not dead, 'till the Launce had pierced his Side.

God doth not always dispose the Success of Mens Actions according to their Intentions, but according to his own secret and just Judgments. So the Children of *Israel* were twice overthrown, although God appointed them a Captain, and bad, and encouraged them to give Battle, *Judic. Cap. 20.*

Ecclesiasticus, Chap. 16. ver. 15. Note, No such Verse in St. Hierom, and other Latin Bibles.

Also Chap. 8. ver. 17. much difference between the *English* and *Latin* Verse.

Again, in Chap. 32. of *Ecclesiasticus*, Before the Thunder goeth the Lightning.

Likewise great difference between the *English* and *Latin* Verse of *Proverbs* 18. 3. and 21. 6.

Also, The Evening and the Morning made the first Day, yet the Sun was not created 'till the fourth day. See *Genesis*, Chap. 1. See in our Treatise of COLOURS and DYING, p. 433.

Of the GARDEN of EDEN.

There are many Things unknown, wherein God will exercise our Faith but not satisfy our Curiosity.

As for Terrestrial Paradise, saith *Causin*, in his *Holy Court*, Tome 3. p. 207. it is a Question among Divines never to be ended, and which miniftreth perpetual Business to all Interpreters upon *Genesis*. *Elias Thesbites* durst boldly say, that not only the Garden of Pleasure was still in Being, but that doubtless many went thither, and the Passage into it lay open to them, but that charmed with the Beauties and Contentments of this Place, they never returned. *Origen* and *Philo* following their Allegories, made a Mystical Paradise and true Ideas of *Plato*, wherein they were imitated by *Psellus*, who saith that the *Chaldean* Paradise (as he calls it) was nothing else but a Quire of Celestial Virtues, the four Rivers signifying the four Cardinal Virtues. Some Place it in *India*, others in *Mesopotamia*, where there would be much ado to accord these four Rivers, but that recourse is had to the Violence of

of the Deluge. Some again Place it in the Air, under the Circle of the Moon, and tell us the four Rivers fall down from thence, and running all under the Ocean, rise up again in those Places where they are now found; which Foppery I will not Honour with a Confutation, saith *Heylin*, in his Description of *Mesopotamia*, p. 612. Some conceive the four Rivers to be *Tigris*, *Euphrates*, *Nilus*, and *Ganges*, and that Paradise was the whole World; but it must follow then that *Adam* when he was driven out of Paradise, was driven out of the World. See *Heylin's* Geography, p. 612. *Hickeringill*, Rector of *Colchester*, in his Survey of the Earth, saith, I have been often upon the search, and the Grand-Inquest, to find in what Place of this Earth was situated the Garden of *Eden*, described only in *Genesis* the Second, with its known Boundaries and Landmarks, whence flowed four Rivers, *Pison*, *Gibon*, *Hiddekel*, and *Euphrates*, the three first have run away with themselves; *Non sunt juveni* — only *Euphrates* keeps its Name and Channel. No Skill in Geography, nor Aid of any Travellers, no not famous *Sir John Mandeville*, nor mad *Tom. Coriat*, ever made any more Discovery of the Garden of *Eden*, than of the Head of *Nile*, &c.

Of *St. GEORGE* of Cappadocia, being the Patron Saint of England.

This Opinion, however believed, is very ill grounded, and certainly Erroneous, for the Circumstances of Things and Times, as well as of the Person related by *Sir Henry Spelman*.

And the Synod of *Ariminum*, congregated by *Constantius Cesar*, declared the Suffering of *George* Apocryphal, for that it was set forth by Hereticks, &c. Venerable *Bede* says the Twenty Third of *April*, or according to the *Latin* Computation, the Ninth of the Kalends of *May*, was the Birth-day of *George* the Martyr, who under *Dacianus* the Potent King of *Persia*, that reigned over Seventy Kings, was Eminent for Miracles, &c. but saith his Sufferings are reckoned among the Apocryphal Writings, which concluding Dash spoil'd all. Now whoever searches will find there never was such an Emperor in *Persia* as *Dacianus*, much less one that reigned over Seventy Kings. But this *Arian* Martyr, who usurped the *Alexandrian* See, and was the Persecutor of *St. Athanasius*, Pope *Zachary* built a Church for, and placed the Head of *George* there, tho' the Body of him had been intirely burnt to Ashes Four Hundred Years before. One Mistake hath happened to promote it, by one *George* of *Ostia*, being sent by Pope *Adrian*, Legate to *England*, and was at the Council of *Ceoltide*; *Ceol* in *Saxon* signifieth *Navis*, and *Tid æstus Marinus*, a Town to which the Tide flowed, which undoubtedly was in *Mercia*, because King *Offa* subscribed to the Council there, therefore must it be towards *Bristol*, on the Banks of *Severn*, which might be the reason the Virgin delivered by him was named *Sabra*. The Honour of killing the Dragon (Type of the Devil and Heresy, as is hinted in *Isaiah* 7. 1.) was first given to *Constantine* the Great. The *St. George* of *Ostia* succeeded in the Establishment of that Religion, *St. Austin* preached, and may better be accounted the Patron of this Nation, being a Church-Worthy,

Worthy, not an Eminent Soldier. Besides, St. George's Atchievements are said to be in *Libya* and *Cappadocia*, and he in *Persia*, William of *Malmsbury* makes the Place of his Martyrdom at *Rama*, if (saith he) we give Credit to Fame. Yet William of Tyre saith he found a resting Place at the City of *Lydda*, and such was the uncertain Account of this George, here in *England*, after the Time of the *Norman Conquest*. And *Gelasius*, Bishop of *Rome*, condemned the Legend of St. George as Heretical and Ridiculous. We cannot, with others, preserve the Saint and condemn the Story; and if an Eminent Martyr was not known in the World Three Hundred Years after his Death, there is no Reliance on Discoveries, if any could be made in after Ages. 'Tis certain, several Ages have been Labouring under the Spurious Legend of the *Arian George*; and they had removed the Scene from *Alexandria*, and at last pitched upon *Cappadocia*, but still with such a Tincture of the Original, the whole Story plainly appears a Fiction: And in *England* hath been only a general Conceit about this Eastern Story, for it hath never been related by those that gave the greatest Credit to such Things, without some Abatement of its Credibility, as is observed before by William of *Malmsbury*. Religion and Notion, as well as the Itch of Superstition was so catching however, that the Opinion of this Saint was most agreeable to our Apprehensions; and from thence it was the Designs and Humours of Princes run according to the Genius of the Age: From these Reasons are the Apparitions of St. George recounted in the Wars undertaken against the Infidels in the Holy Land, &c. where he is said to be seen to

fight for them. The Devotion of *Justinian* uherited him into the Kalendar, as that of *Robert de Oily* built a Church of *St. George* in the Castle at *Oxford*, and King *Edward III.* after him built the Chappel of *St. George* at *Windsor*, as well as founded the Order of the Garter to his Honour; so *Lydda*, famous for the Tomb of *St. George*, was raised to the Dignity of an Episcopal See, and the Tower of *Antioch*, formerly called the Two Sisters, gained the Name of *St. George*; yet in none of all these was he called or intitled, Saint *George* of *Cappadocia*, by which it should plainly seem, the Learned were not satisfied that *Cappadocia* was the Country of our *St. George*. But it was no small Advantage to have the Fiction of a Protecting Saint animate the Soldiers in their Wars; and as such those of the Honourable Order of *St. George* may look upon it to contain a Symbolical Representation of fighting against the Dragon of Heresy, &c. And to conclude, this Allegory of fighting and killing the Dragon, hath been taken up by other Nations, which had no particular relation to any *St. George*, as witnesses the Order of Knighthood, called of the *Dragon*, in *Hungary*, &c. instituted by the Emperor *Sigismund*, who was very fortunate in several Battles against the *Turks*, and by whose means Schism and Heresy, the Dragons that devoured Religion, had been supplanted and vanquished. And for the like Reason is there in the Collar of the Order of *St. Michael*, instituted by King *Lewis XI.* the Picture of *St. Michael* the Archangel, combating with the Dragon of the Infernal Deep, alluding to the Encounter of *St. Michael* with the Dragon in the *Apocalypse*. See *Vincentius*, *Bede*, *Sir Henry Spelman*, and Mr.

Mr. Thomas Salmon's Historical Account of
St. George.

Of the Ten SIBYLS.

One *Petit* a Physician at *Paris*, has inded-
voured to prove that there never was any
more than One Sibyl that was a Prophetess;
that she was a *Grecian*, because all the Oracles
ascribed to her are in *Greek* Verses, and that
it's improbable that Women born at *Chaldea*,
Phrygia, and *Italy*, should write in *Greek*.
Then he proceeds to prove that the Name of
this Sibyl was *Herophile*; that she was born at
Erythraea, in the Lesser *Asia*, and that her di-
versity of Names was occasioned by her Tra-
vels, or by the Spirit's Transporting her from
one Place to another; and that she died at
Cuma in *Italy*. The *Romans* had a great Ve-
neration for these Oracles, and kept what they
could procure of them in the Capitol, to
which they had recourse in Cases of Difficul-
ty. *Vossius* says the ancient Books of the Si-
byls at *Rome* were altogether Prophane; but
that those brought from *Greece* by *Crassus*, con-
tained some Prophecies that had been given by
certain *Jews* for Sibylline Oracles, which is
the reason of those Prophecies of the Coming
of the Messiah, that are found among them.
See *Berosus* among the Historians, Vol. 1. p. 300.

The Names of,
the Ten Sibyls.
See p. 135.

The Story of Pope JOAN confuted.

*Confutatio Fabulae de Joanna Papissa cum Ni-
husio.* Clearer Confirmations must be drawn
for the History of Pope *Joan*, who succeeded
Leo IV. and preceded *Benedict III.* than many
we yet discover. And since it is delivered
with *aiunt* and *ferunt* by many, since the

Blondell, a skilful
Calvanist, also
wrote a Book
purposely to con-
fute this Fable.
See *Cressy's Church*
History of Britain,
p. 719.

Learned *Leo Allatius* hath discovered that the ancient Copies of *Martinus Polonus* (who is chiefly urged for it) had not this Story in it; since not only the Stream of *Latin* Historians (among whom are *Genebrard*, *Nicephorus*, *Baronius*, *Platina*, *Sedrenus*, *Zonaras*, *Palmerinus*, *Ornuphrius*, *Sugerius*, *Volaterran*, *Spondanus*, who writ of the Succession of Popes and General Councils) have made no mention of it; but *Photius* the Patriarch (who was condemned by the Fourth *Constantinopolitan* Council, for Usurping the Chair of *Constantinople*, and Expelling *Ignatius* the lawful Bishop, as also for disobeying the Authority and Decrees of the Apostolick See of Old *Rome*, as may be seen, *Action I.* of that Council, and thereby grown a bitter Enemy to *Rome*) *Metrophanus Smyrnæus*, and the exasperated *Greeks*, have made no mention of it, it is but reasonable to conclude it false. See *Dr. Brown's Inquiry into Vulgar Errors*, and *Turberville* in his *Manual of Controversy*.

Of WILLIAM the Conqueror.

That *William* the Conqueror of *England* was a Bastard, born of *Arlet*, a Skinner's Daughter, living in the Town of *Falais* in *France*, seems to carry no small Credit among the People, confirmed in the Opinion thereof by Chronologers of no small Reputation in the World; yet doth it admit of some doubt therein, since some Authors assure us that *Bastardus* was but the Sirname of that *William*, whose Father was *Robert* Duke of *Normandy*; which Name of *Bastardus* was ingraved in Capital Letters round his Signet, as his proper Sirname, which was the Custom of those Times

Times to practice; and therefore only serves for an Error of the like Nature with that of some Persons taking *Sanguis Draconis* for the Blood of a Dragon, when it is the Gum of a Tree. By somewhat the like Mistake is the Name of Sir *John Haukwood* (whose Monument stands in the great Church at *Florence*) changed into *John Sharp* by Foreigners, who finding his Name to be *Joannes Acutus*, therefore call him by the Name of *Sharp*, by which Name he is also returned into *England*; whereas indeed they there omitting the *h* in *Latin* as frivolous, and the *k* and *w* as unusual, they thereby turn *Haukwood* into *Acutus*, and so by Mistake we have Sir *John Sharp* for Sir *John Haukwood*. See *Verstegan*, 302.

Of GOLD-MINES.

Tho' we read in the Law Books *De aurifodinis* and *Argentifodinis*, yet it is affirmed by Merchants that have travelled for Gold, that there are Silver-Mines, that is, there is Oar or Soil of Silver digged out of the Earth, and out of that by Art is Silver tried; but there is no Oar or Soil of Gold, but it is Gold originally in small Sand or Dust, which being washed down to the Shoar, it is found by the yellowness of the Water, as in the Rivers *Tagus* and *Pactolus*. And this is confirmed by *Job*, Chap. 28. ver. 1. and 6. *Surely, there is a Vein for the Silver, and a place for Gold where they find it.* And soon after, *The Stones of it are the place of Sapphires, and the Dust of it is Gold.* And yet for distinction sake, it is called *Aurifodina*. See *Cokes 2 Inst.* 579. See Gold in METALS. Of the Gold of *Ophir*. See in COINS.

of

Of the MARSHES of WALES.

Marshes of *Wales* is a Name corruptly used; for Marshes are properly marshy Grounds; and it was anciently called the *Mearces* of *Wales*; and the *c* being in our ancient Language pronounced as *k*, it was in Pronunciation the *Mearkes* of *Wales*, i. e. the Marks, Bounds, or Limits of *Wales*. So one of the Seven Kingdoms, in the Time of the *Heptarchy*, was called *Mercia*, after the *Latin* Name, but of our Ancestors it was called *Mearkenland* and *Mearkenryc*, that is, the Country or Kingdom marked or limitted out. And hereunto accordeth our Name of *Mearstones*, which should be *Mearcstones*, that stand for Marks and Bounds to divide Lands. See *Verst.* 157.

Of the MAYOR of LONDON.

The Custom of the Inhabitants of the two Cities of *London* and *York*, calling their Mayor *The Lord-Mayor*, (others being only called Mr. Mayor) altho it be a practice of long standing, yet is it an Error in them, and grounded upon Ignorance. For the ancient Inhabitants of *Franconia* (from whence the *French* are descended) and their Neighbours the Old *Saxons* (of whom the *English* have their Original) being People of *Germany*, and descended (as saith *Berosus*) of the Old *Hebrews*, had retained in their Language many *Hebrew* words. Now the word *Mar* (corruptly pronounced *Mayr* or *Mayor*) in the *Hebrew* signifieth *Dominus* or Lord, from which it is easily conjectured how the chief Ruler of these two Cities came to be nominated Mayors; but that

that they should have the Name of Lord prefixed, is a manifest Error, since Mayor of it self signifies Lord.

Of the first COMMUNITY among MEN.

Ancient Writers much Celebrate the State of the first Men of the World, telling us at that Time all Things were common, and the Terms of *Mine* and *Thine* were not known, which yet we know not how to grant, since it is evident in *Abel* and *Cain*, that tho' they were Brethren, yet had each of them their distinct Families and distinct Possessions: For how else could they have offered a Sacrifice to God? Or how could that which was offered in common by them be Accepted and Rejected? By which it doth manifestly appear, that from the beginning of the World things were accounted as of Right, belonging to him who was the first Occupant, and that every One did challenge that to be his own, which by his Labour, Industry, or good Fortune he had got Possession of.

Of Things being in Common among the first Inhabitants of the Earth.

Of NESTOR being said to live Three Hundred Years.

In this Computation it is only meant that *Nestor* lived so long as that Motion lasted, wherein the Sun performed Three Hundred of its yearly Courses, or the Earth, One Thousand and Ninety Five Circuits about its own Axis. And these sort of Allusions are common, as that our Saviour is said to be three days in the Grave, yet was it but one day and two pieces of days.

Of

Of ELDERSHIP, giving PREFERENCE to
MEN.

According to *Junius* and the *Septuagint*, transposing of the word *Elder*, they have made the Question, Whether *Shem* and *Cham* were elder than *Japhet*? Which Sir *W. Rawleigh* hath well observed, according to the course of Scripture, that there never was any Respect given to the Eldest in Years, but only in Virtue; as in the Examples of *Enoch*, *Abraham*, *Jacob*, and *David*, and that the first place might be given to *Shem*, for that the *Hebrew Nation*, *Abraham*, the Prophets, *David*, and Christ descended of him, so that whether you will follow the Vulgar *Shem frater Japhet major*, or the *Septuagint Shem fratri Japhet majoris*, or with *Pereius*, *Shem frater Japhet ille magnus*. The famous Brother of *Japhet*, is left to Judicious Readers. And in the Genealogy of our Saviour, 'tis said, *Abraham* begat *Isaac*, (not *Ishmael*, who was the Eldest) and *Isaac* begat *Jacob*, (not *Esau*, who was also the Eldest.)

As to Dr. *Heylin*, and some other Writers, affirming that *St. Peter* never was at *Rome*, Dr. *Pearson* hath answered that Error, and proved that he was at *Rome*.

Penelope, famous in *Homer* for her Chastity, *Locryphon* reproaches as one that lay with many Adulterers.

The Error about *Augustine* the Monk. See Marginal Note in the First Volume of this Work, p. 91.

Many Errors in Points of Faith and Religion. See in Hereticks, &c. in RELIGION.

Errors in Chronology. See *Vol. 1. p. 202.*
Vol. 2. p. 81. about Brute, Vol. 1. p. 205.

Of Anatomists about the Infusion of the Soul. See in *MANKIND, Vol. 1. p. 482.*

The Error about boiling Gold in Broth. See in *METALS, Vol. 2. p. 32.*

The Error of those Philosophers, who told *Gelon King of Sicily*, the Grains of Sand were innumerable. See *p. 135.*

Dr. *Cave's* Vindication of *Eusebius*, from the Erroneous Opinion of his being an *Arian*. See *Eusebius* among the Historians in the Treatise of *HISTORY*.

About *Greece* being the Mother of Arts and Sciences, *Vol. 2. p. 46.*

Some Erroneous Opinions about the *Sa-lique* Law. See in *LAW, Vol. 1. p. 329.*

Errors in the *Julian* and *Gregorian* Account, called *Old Stile* and *New Stile*. See in *ASTRONOMY, p. 273, 274.*

The Painting the Devil black, is not used by those Natives who are of a black Complexion, for they represent him white; therefore is it an Error to ascribe Black alone to that Fiend. And here we may observe that anciently among the *Pagans*, the word *Dæmon* was often taken in the better part, but amongst us Christians it is attributed only to Evil Spirits. So the word *Conspiracy* in *Latin* and *French*, is used for an Agreement, to do a good or an evil Thing, but now we always understand it in the Evil part. Perhaps it is no ordinary Error in us to give Preference to the right Hand in Walking, &c. since the *Turks* upon a good Consideration prefer the left Hand before the right, being thereby made Master of his Sword with whom he walks. See before in the Treatise of *AUGURY, p. 320.* and the superstitious Customs there recited. The

The naming Vegetables and Plants by Humane Names, tho' of great Antiquity, causeth many Errors among the Vulgar, who conceit great Virtues in their Natures, from being named of the same Appellation with Saints, &c. So *Paul's Betony* is but derived from *Paulus Ægineta*, an ancient Physician of *Ægina*, and is no more than Speedwell, tho' the People have great Opinions thereof, in reference to *St. Paul*. The like Expectations are raised from *Herba Trinitatis*, which only obtained that Name from the Figure of its Leaves. In *Milium Solis*, the Epithet of the Sun, hath enlarged its Opinion, yet had only that Name because it grew plentifully in the Mountains of *Soler*. So are they deceived in many others, as in *Horse-Raddish*, *Horse-Mint*, *Bull-Rush*, &c. whereas that Expression is but a Græcism, *Hippos* and *Bous*, (that is, Horse and Bull) intending no more than Great. Thus would he be in a great Error, who takes *Arbor Vitæ* to have its Name from the Tree of Life in Paradise; or *Arbor Judæ* to be the same supplied *Judas* with a Gibbet; or takes *Sanguis Draconis* (the Gum of a Tree) for the Blood of a Dragon; or *Aqua Fortis* (a Corroding Water) for Strong Water, or a Cordial. The same Error would be in him who takes *Galilæus*, Name of the *Medicean* Stars, (which he gave to those secondary Planets he discovered about *Jupiter*) as supposing any Medicinal Virtues in them, when that Name was only given in Honour to the Duke of *Tuscany*, named *Medicis*.

Hippocrates, in his Book of the Nature of Infants, saith, the Bird is generated of the yellow of the Egg, but is nourished by the white of the Egg, which *Aristotle* proves manifestly

feftly untrue in his Book of Animals, for the original of the Chicken is in the White, and its Nourishment fuck'd in thorow the Navel out of the Yolk.

Tho' in the Reign of the Emperor *Severus*, we read Three Thousand Women were Indicted for Adultery, and that almost all Women were Courtezans; yet might they not be in Verity fuch, fince the *Nicolaitans*, to avoid the Suspicion of Jealoufy, prostituted their own Wives; and the *Gracians* called the fair *Helena* a Courtezan, only becaufe *Xeuxis* the Painter who had drawn her Picture very fine, took Money of every one that would fee her.

Tho' among the ancient Philosophers, many were ordinarily esteemed Atheifts, fuch as *Epicurus*, *Lucretius*, &c. yet an Atheift among the Pagans, might be the beft Christian, for in believing no God of their Multitude, they perhaps believed there was a more Divine Creator.

So a certain Philofopher declared to one of the Emperors, that when he writ in earneft, he writ in the Name of One God, and when in jeft he writ in the Name of many. And it is faid of *Trifgemiftus*, that he was fo named becaufe he compofed a Treatife of the Trinity. See in *RELIGION*, Vol. I. p. 58.

The *Parifians*, or People of *Paris*, brag their City was never conquered, but that is becaufe upon the leaft Diffrefs they compounded with their Enemy.

Tho' it is faid all ponderous Bodies reduced to Afhes abate in their former Gravity, yet Antimony reduced to Afhes, exceeds rather than diminifhes; and as to *Archimedes's* Tryal of the two Diadems or Crowns of the King of *Egypt*, who believing himfelf deceived by
his

More of this famous *Archimides*, see in *Mathematical Magick*.

his Goldsmith, and that one of them contained much Silver, the King was desirous to know the Truth without breaking them. Wherefore *Archimedes* caused two Vessels to be made of equal bigness, with Receivers under them, and caused them to be filled brim full of Water, and therein he did put these two Crowns afunder, and gathered up the Water very circumspectly, whereof one of the Vessels did spill more than the other; for Sixteen Pounds of Silver did spill Thirty Six, and Sixteen of Gold did spill but Twenty, and the Crown Twenty Four, so it was Twelve Pounds Silver and Four Pounds Gold; which when *Archimedes*, by Arithmetical Proportion, grounded upon Geometrical Observation, found out, he was so overjoyed, that he ran about the Streets like a Madman, crying aloud, *I have found, I have found*. Now saith *Gerard Malynes* in his *Lex Mercatoria*, p. 192. How is it possible that *Archimedes*'s Geometrical Tryal (so much celebrated by Antiquity) could be sure, since Gold hath an Attractive Power, so that several Pieces of it may be retained in a Cup of Wine? For by reason of the hot and dry Quality of Gold (saith he) it hath a Property, that filling a Cup of Wine to the brim, yet may you put Ten or Fifteen Pieces of Gold Coin into it, gradually and leisurely, without spilling any of the Liquor, or making it run over, it apprehending and clasping as it were the Liquid Quality of the Wine. See the Author aforesaid in *Lex Mercatoria*.

Tho' it be said there is an Antipathy between the Wolf and Sheep, the Vine and Cabbage, &c. yet certainly there is not any innate Enmity or Hatred between those Things; for the Wolf pursues the Sheep out of Love and

and Desire to please his Appetite with the Flesh of it; and that which is called Antipathy between the Vine and the Cabbage is as improper, for the reason of their not thriving when sown near to one another in the same Ground, is, because the Nutriment proper for the Growth of one, is also proper for the Increase of the other, and the Vine draws away all that Aliment by Strength (as great Fishes devour the less) which should nourish the Cabbage, whereby the latter droops and dies. The like may be said of many other Vegetables, which are accounted to bear Antipathies to each other; of which you may see more in the Treatise of *VEGETABLES* and *AGRICULTURE*, p. 22. And the Ancients, when they did not readily know the cause of Hatred between Animals, &c. sheltered their want of Judgment under the Terms of Antipathy, and the like: The true Cause and Definition of which Word see in the Treatise of *ANIMALS*, p. 7.

See the Treatise
of *Animals*, p. 6.

See *Primrose's* Popular Errors in Physick, where he declares, 1. The deceitful Judgment upon Urin; 2. That the Sex, or a Woman with Child, are not to be known thereby; 3. That Gold is in vain boiled in Broth for a Consumption. See Gold in our Treatise of *METALS*. 4. That strong Drink is unwholesome drank in a Morning; 5. That strong Waters are very ill after gross Meats, because they drag the Meat down to the bottom of the Stomach before it can Concoct, and have its proper Digestion; 6. That red Cloaths are not preferable above others for the Measles; 7. That it is not hurtful to Purge in the Dog-days; 8. That old Men may use Phlebotomy; 9. That any Vein in the Arm is alike to bleed

Popular Errors in
Physick.

in; 10. That crude, or unprepared Quicksilver, is not hurtful taken by the Mouth; 11. Errors about the Bezoar-Stone and the Unicorn's-Horn; 12. That the Stone in the Bladder cannot be dissolved by any Thing taken by the Mouth; 13. That Opium is not to be feared if rightly prepared; 14. That applying Pidgeons and young Whelps to the Feet, do little or no good; 15. That of the Weapon Oyntment, is a false Notion; 16. That the Seventh Son curing the King's Evil, is not to be minded; 17. That the Antimonial Cup is Poyson, and a Thing deceitful, dangerous, and most ridiculous; 18. That the Fume of Tobacco goes not up into the Brain; 19. That all Vomits are dangerous, the Stomach being made to receive and not refund, unless in cases of Poyson, which should always be fetched out the way it went in; 20. That the Proverb is false which says, *Milk is to be washed from the Liver*; since to Curdle it on the Stomach may convert it to Poyson; 21. That the Mountebank Antidote is but a foolish Performance, in respect of its Universality, since no one Thing can be a Remedy for many Diseases. See *Witty's Translation of Primrose's Popular Errors*.

Dr. Brown's Inquiries into the Errors here recited.

See Dr. Brown's Inquiries into Common and Vulgar Errors, viz. That Chrystal is Ice; A Diamond broke by the Blood of a Goat; That Glas is Poyson; That white Powder kills without Report. (See Marginal Note in our Treatise of GUNNERY.) That Coral is soft under Water; That Porcelaine Clay for China Dishes lies a Hundred Years in Earth; That a Carbuncle gives Light in the Dark; That Mandrakes grow naturally under the Gallows; That the Root gives a Shriek upon Eradication;

Eradication; Or fatal to dig it up; That Bays preserve from Lightning; Bitter Almonds a Preservative against Ebriety; That Camphir causeth Impotency; That an Elephant hath no Joints; A Horse and Pidgeon no Gall; That a Beaver castrates himself when hunted; That a Badger hath Legs on one side shorter than the other; That a Bear brings forth Cubs informous; Of the long Life of Deer; That a King's Fisher shews the Wind; Of the Basilisk, Gryphin, Phoenix; That a Salamander lives in Fire; That the Amphibena hath two Heads; Vipere force thro' the Body of their Dam; That Hares are each Male and Female; That Moles have no Eyes; Lampries many; Snails two, and those at the end of their Horns; That the Camelion lives on Air; That the Ostridge digests Iron; Of the Unicorn's Horn; Of Swans singing before Death; That the Flesh of a Peacock corrupts not; That Storks will only live in Republicks; That Whelps are Blind Nine Days; Of Antipathies between a Lyon and Cock, Toad and Spider; See in *ANIMALS*; That an Ear-wig hath no Wings; That the Chicken is made out of the Yolk of the Egg; That Snakes sting; That Man hath only an erect Figure; The Heart on the left side, and Pleurifies only on the left Side; That the right Hand is assignable only to one Side; That Men swim naturally; That Men drowned float on the Ninth Day; That Women drowned swim Prone, Men, Supine; That Men are heavier dead than alive; That Jews naturally stink; Of the Climacterical Year, Sixty Three. (See in *ARITHMETICK*.) Of the Dog days; Of the Pictures of the Pellican, Dolphin, Grasshopper, Serpent tempting *Eve*; *Adam* and *Eve* with Navels;

See Superstitious
Customs in Augu-
ry.

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Joan ; *Epicurus* the Philosopher ; That *Hannibal* eat thro' the *Alps*, with Vinegar ; That *Xerxes's* Army drank whole Rivers dry, &c. To all which Doctor *Browne*, gives many demonstrations to prove their Falsties, and renders most of those Opinions to be Absurd, and doubtful, if not wholly false.

There hath been likewise Published a Refutation of Doctor *Brown's* Enquiry into Vulgar Errors, the Author whereof is *Alexander Ross*.

The End of the Second Volume.

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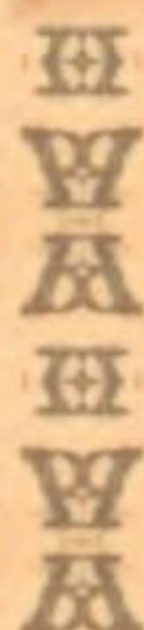
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